



Bike Training Manual

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Welcome and congratulations cyclists! If you are reading this, you have signed on and committed to riding the combined distance of 130 miles (or 80 or 50 miles), as part of the **Angel-Ride** during Memorial Day weekend, May 24 and 25th, 2008.

Please accept our sincerest congratulations and gratitude for accepting the challenge and helping the kids! Regardless of your experience as a cyclist, you have a fun-filled and challenging journey awaiting you during the weekend, where the bike course will cover 80 miles on Saturday and 50 miles on Sunday, all in the company of like-minded, enthusiastic, and adventurous riders!

Before I go on, let me introduce myself. My name is Al Lyman. I am a full time professional endurance sports coach who is passionate about helping others to achieve their dreams through their participation in our sport. I have been a life long endurance athlete and have completed hundreds of swim/bike/run events, including 8- Ironman Triathlons, multiple multi-day cycling events, and over two dozen marathons and ultra-runs. I own my own coaching company called Pursuit Fitness (<http://pursuit-fitness.com>). Feel free to visit the site where you'll find tips and articles that will help you during your journey. For more information about specific training plans and coaching or any other aspect of your preparation, you can always feel free to visit: <http://coach-al.com> or email me directly at coachal@coach-al.com. Ok, enough about me!

In this training manual, you will find a plethora of information that will not only help you prepare over the short term to be ready for the ~~Angel-Ride~~AngelRide, but will also help you prepare for the long term to become a stronger, smarter cyclist.

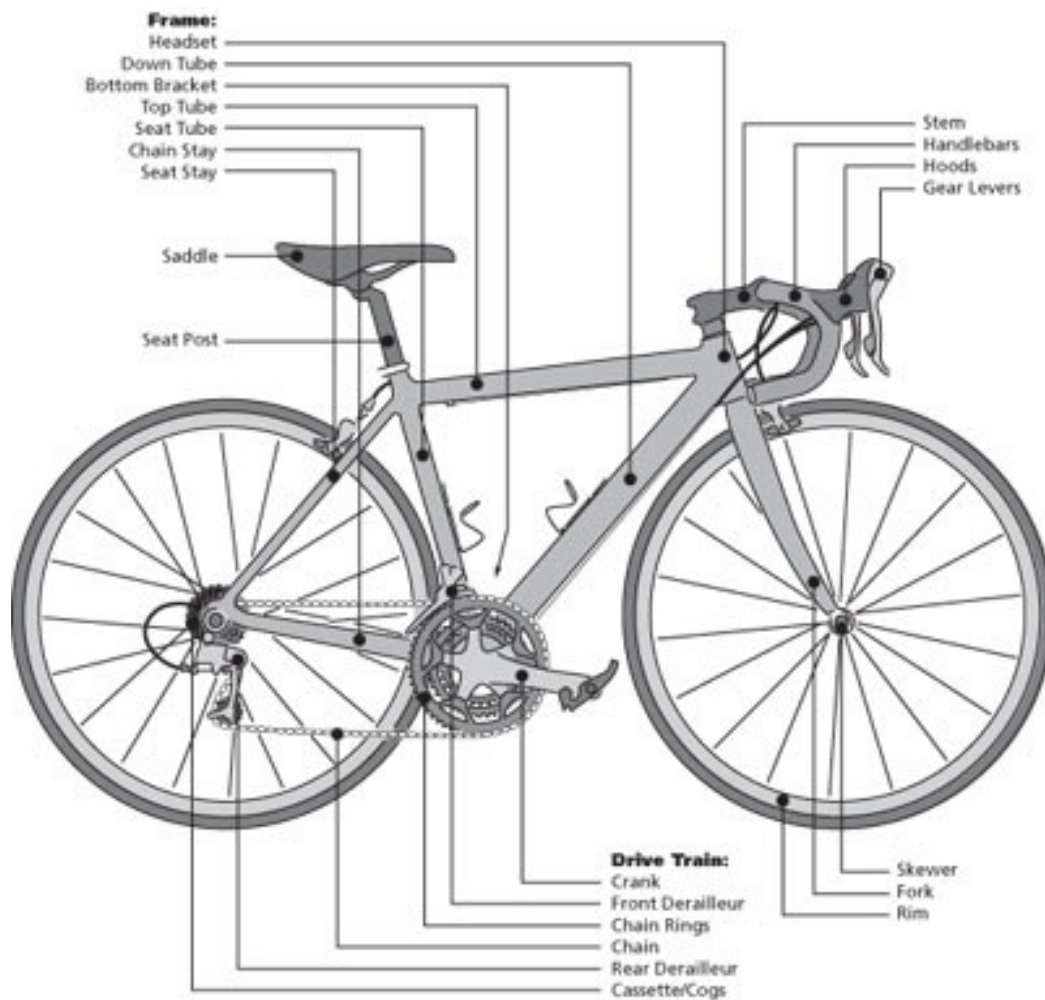
nNutrition, training, heat and hydration, bike fit and comfort, riding safety and lots more. To see the specifics about what is included, see the table of contents which follows!

I wish you the best of luck in your journey! If you need any assistance or have any questions about any aspect of your riding including "bike fit" or equipment choice, would like to do some fitness testing on the *Computrainer* to set your training heart rate or power zones, or would like to review any other aspect of your preparation including off the bike conditioning and flexibility, please don't hesitate to contact me directly via email, coachal@coach-al.com, or give me a call on my cell phone: 860-

CYCLING: *The BASICS*

In this first section I will introduce some basics for those of you who are new to road cycling. This will include some pointers and tips that I hope will help you become more proficient and confident in your riding, especially in a group setting. Special thanks goes out to "LuvBobbies" cycling for providing some of the graphics and information in this section! Other authors contributed as well and their names are noted in those sections.

When discussing cycling skills, especially in a group setting, the first topic involves *handling skills* such as **balance, braking, shifting gears, dealing with clip-less pedals, pedaling in a circle and "spinning," and riding in a straight line**. More advanced skills include **drafting, pace-lining and pace line safety, riding etiquette, an overall riding and pedaling effort that should be constant and smooth and of course hill riding and training!** Before discussing some of those elements associated with training and riding safely and skillfully, it is important to be sure you understand and know the basic parts of your bike. See the below diagram which describes YOUR bike in detail!



The BASICS: Bike Fit

This manual is certainly NOT meant to be a comprehensive guide to “all things” cycling, but it is beneficial to discuss some basics involving bike “fit.” Assuming you have the correct size frame and are working with your local shop to get your bike ready to go for the **Angel-Ride**, the primary goal of “tweaking” your fit and working through the ongoing fit process is so that you can be as comfortable as possible and to maximize your pedaling efficiency and power while preventing pain or injury. A bike isn’t an inherently comfortable thing to be on, but if you are fit correctly to it, you can be more comfortable than you might realize! Don’t give up on the fit process until you achieve the comfort you deserve! Here are some basic elements of “fit” and some tips to help you determine whether you’re set up correctly:

Saddle Height: this is correct when it allows you to extend your leg fully with a *slight bend of your knee at the bottom of the pedal stroke*. As an example of what else you can do to check this, when I am doing a “basic” review of fit for a cyclist in a one on one setting, I will often have them remove their shoes when seated on the bike and have them place their feet on top of the pedal. If they can place their feet on top of the pedal with their leg fully extended and straight (without that slight bend), saddle height is about right.

- If you notice your hips rocking from side to side or up and down while pedaling, your saddle may be too high.
- If you are having issues with “Saddle Sores” and have considered all of the other common causes for this, take a look at saddle height. Often the saddle is too high, increasing the pressure in your soft tissue area.

Saddle Angle: should be level. If the nose of your saddle tilts down, you’re likely to be sliding forward increasing pressure on your hands. Not good!

Handlebar width: should be equal to shoulder width to open your chest for better more efficient breathing and to add stability to bike handling.

Cleat Alignment: the ball of your foot should be over or slightly in front of the pedal axle and neutral. There shouldn’t be any twisting sensations in your knees or feet while you pedal. If there is, cleat adjustment may be off or your saddle may be too high.

To give you some additional information on fit and position, see the below article provided courtesy of Ed Pavelka at RoadBikeRider.com Thanks Ed!

How to Perfect Your Riding Position & Technique

By Ed Pavelka of www.RoadBikeRider.com

Cycling is full of prodigious numbers—the distances ridden, the calories consumed, the tires trashed. Another statistic that can seem astounding is the number of pedal strokes made. Let’s suppose it takes you six hours to ride a century and you pedal at the rate of 90 rpm throughout. As you cross the finish line, you will be making pedal stroke number 64,800. Whoa, that’s a lot! But it barely registers on the scale of what happens during a full season. For example, during the year in which I had my

biggest mileage total, I figure that I got there by pushing the pedals around approximately 13,340,000 times. Can you say repetitive use injury? You can see why cyclists are good candidates, especially if we aren't pedaling from a nearly perfect position.

Your body and bike must fit together and work together in near-perfect harmony for you to be efficient, comfortable, and injury-free. The more you ride, the more essential this is. If even one thing is out of whack, it's a good bet that it will cause a problem during thousands of pedal strokes.

Fortunately, it isn't difficult to arrive at an excellent riding position. But it does take time and attention. You need to be careful with your initial bike set-up, and then conscientiously stay aware of your body and the need for occasional refinements. As time goes by, your position will stabilize and you'll be riding in a smooth groove. The following guidelines come from my experience and the advice of various experts. One is Andy Pruitt, Ed.D., the director of Colorado's Boulder Center for Sports Medicine. Andy has probably solved more position problems than anyone during his years of work with elite cyclists.

As you work on your riding position, always remember Pruitt Rule No. 1:

"Adjust your bike to fit your body. Don't force your body to fit the bike."

- **Frame:** Measure your inseam from crotch to floor with bare feet 6 inches apart, then multiply by 0.68. The answer is a good approximation of your road frame size, measured along the seat tube from the center of the crank axle to the center of the top tube. As a double check, this should produce 4 to 5 inches of exposed seat post when your saddle height is correct. When the crankarms are horizontal, the top tube should be right between your knees when you squeeze them together.
- **Arms:** Keep your elbows bent and relaxed to absorb shock and prevent veering when you hit a bump or brush another rider. Hold arms in line with your body, not splayed to the side, to be more compact and aerodynamic.
- **Upper Body/Shoulders:** Don't be rigid, but do be fairly still. Imagine the energy wasted by rocking side to side with every pedal stroke on a 25-mile ride. Save it for pedaling. Also, beware of creeping forward on the saddle and hunching your shoulders. There's a tendency to do this when pushing for

more speed. Shift to a higher gear and stand periodically to prevent stiffness in your hips and back.

- **Head and Neck:** Resist the temptation to put your head down when you're going hard or getting tired. It takes just a second for something dangerous to pop out of nowhere. Occasionally tilt your head to one side and the other instead of holding it dead center. Change your hand location to reposition your upper body and give your neck a new angle.
- **Hands:** Prevent finger numbness by moving your hands frequently. Grip the bar firmly enough to keep hands from bouncing off on unexpected bumps, but not so tightly that it tenses your arms. For the same safety reason, keep your thumbs wrapped around the bar instead of resting on top. Move to the drops for descents or high-speed riding, and the brake lever hoods for relaxed cruising. On long climbs, grip the top of the bar to sit upright and open your chest for easier breathing. When standing, hold the lever hoods lightly and sway the bike side to side in synch with your pedal strokes, directly driving each pedal with your body weight.
- **Handlebar:** Width should equal shoulder width to open your chest for better breathing. A bit too wide is better than too narrow. Make sure the hooks are large enough for your hands. Modified "anatomic" curves may feel more comfortable to your palms. Position the bottom, flat portion of the bar horizontal or pointed slightly down toward the rear brake.
- **Brake Levers:** Move them around the curve of the bar to give you the best compromise between holding the hoods and braking when your hands are in the hooks. Most riders do best if the lever tips touch a straightedge extended forward from under the flat, bottom portion of the bar. The levers don't have to be positioned symmetrically—remember Andy Pruitt's rule. If your reach is more comfortable with one lever closer to you than the other, put 'em that way.
- **Stem Height:** Start with the top of the stem about one inch below the top of the saddle. This should give you comfortable access to every hand position. As time goes by, think about lowering the stem as much as another inch (not all at once) to improve your aerodynamics. If your lower back or neck starts complaining, or if you notice you've stopped using the drops, go back up. Never put the stem so high that its maximum extension line shows, or it could be snapped off by your weight on the bar.

- **Top-tube and Stem Lengths:** Combined, these two dimensions determine “reach.” Depending on your anatomy and flexibility, your reach could be longer for better aerodynamics, or it may need to be shorter for back or neck comfort. For most riders, when they’re comfortably seated with their elbows slightly bent and their hands on the lever hoods, the front hub will be obscured by the handlebar.
- **Back:** A flat back is the defining mark of a stylish rider. Notice I didn’t say a great rider. Anatomy and flexibility have a lot to do with how flat you can get. Lance Armstrong, for instance, has a rounded back that’s not picture perfect and yet he still manages to go down the road pretty well. The same was true for John Howard, once America’s dominant road [racer](#). I’m in their boat (back-wise, not speed-wise). Once you have the correct reach, work on flattening your back by imagining touching the top tube with your belly button, this helps your hips rotate forward. You don’t want to ride this way all of the time, but it’ll help you get more aerodynamic when you need to.
- **Saddle Height:** This is the biggie. You’ll find various methods for calculating this critical number. Here’s the one I like best. It has become known as the **LeMond Method**, because Greg brought it to us from his Renault team in the 1980s. (Invite a friend over so you can help each other and both wind up with primo positions.)

Begin by standing on a hard surface with your shoes off and your feet about 6 inches apart. Using a metric tape, measure from the floor to your crotch, pressing with the same force that a saddle does. **Multiply this number by 0.883.** The result is your saddle height, measured from the middle of the crank axle, along the seat tube, to the top of the saddle.

Add 2 or 3 mm if you have long feet in proportion to your height. If you suffer from chondromalacia (knee pain caused by damage to the underside of the kneecap), a slightly higher saddle may feel better. However, it should never be so high that your hips must rock to help you reach the pedals. If this formula results in a big change from the height you’ve been using, make the adjustment by 2 or 3 mm per week, with several rides between, till you reach the new position. Changing too fast could strain something.

- **Saddle Tilt:** The saddle should be level, which you can check by laying a yardstick along its length and comparing it to something horizontal like a

tabletop or windowsill. A slight downward tilt may be more comfortable, but be careful: more than a degree or two could cause you to continually slide forward, putting pressure on your arms and hands.

- **Fore/Aft Saddle Position:** Sit comfortably in the center of the saddle, click into the pedals, and set the crankarms horizontal. Hold a weighted string to the front of your forward kneecap. For most of us, the string should touch the end of the crankarm. This is known as the neutral position. Loosen the seatpost clamp so you can slide the saddle to get it right. Seated climbers, time trialists, and some road [raceriders](#) may like the line to fall a centimeter or two behind the end of the crankarm to increase pedaling leverage. On the other hand, track and criterium [raceriders](#) may like a more forward position that breeds leg speed. **Remember, if your reach to the handlebar is wrong, use stem length to correct it, not fore/aft saddle position.**
 - **Butt:** By sliding fore or aft on the saddle you can bring some muscles into play while resting others. This is a technique favored by Skip Hamilton, my teammate in the 1996 [RaceRide](#) Across America. Moving forward emphasizes the quadriceps muscles on the front of the thighs, while moving back highlights the hamstrings and glutes—the powerful butt muscles.
 - **Feet:** Some of us walk like pigeons, others like Charlie Chaplin. Your footprints as you leave a swimming pool will tip you off. To make cycling easier on your knees, shoe cleats must put your feet at their natural angle. This is a snap with clipless pedal systems that allow feet to pivot freely (“float”) several degrees before release. Then, all you need to do is set the cleats’ fore/aft position, which is easy. Simply position them so the widest part of each foot is centered on the pedal axle. If you experience discomfort such as tingling, numbness or burning (especially on long rides), move the cleats rearward as much as a centimeter.
 - **Crankarm Length:** In general, if your inseam is less than 29 inches, use 165-mm crankarms; 29-32 inches, 170 mm; 33-34 inches, 172.5; and more than 34 inches, 175 mm. A crankarm’s length is measured from the center of its fixing bolt to the center of the pedal mounting hole. The length is usually stamped on the back of the arm. If you use longer crankarms than recommended, you’ll gain leverage for pushing big gears but lose some pedaling speed.
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The BASICS: Bike Equipment You Will Need

- Be sure your bike is equipped with at least two water bottle cages. Being able to carry adequate water and calorie drinks is essential to ride well and not run into dehydration or nutrition problems.
 - Appropriate shoes, jersey, warm clothing such as leg warmers, arm warmers, rain jacket, gloves, and sunglasses for a variety of conditions from bright sun to dark clouds.
 - Learn how to quickly change a flat, and always have enough equipment on board to repair TWO flats!
 - Pump your tires before each and every ride. I recommend running 110-120 psi to avoid "pinch" flats. Too low pressure will make you more susceptible for these.
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The BASICS: *Bike Handling*

Pedaling Smooth: When you're pedaling, you should ideally focus on making full circles. Concentrate on having the feeling of wiping your foot at the bottom of the stroke and lifting the pedal at the top. When your pedal strokes are complete and even circles, your bike will remain "steady" and won't weave from side to side with each down stroke. You will also be more efficient and ride faster with less effort.

Holding Your Line: Being able to hold your line and ride steady and balanced is key to good group riding and to pace line riding. It is important to be able to look behind you or remove a hand from the handlebar (to get water or signal turns or road hazards) without allowing your bike to swing into other riders or off the road. The rider behind you will appreciate this as well because its very tiring to ride behind someone who's bike is moving from side to side.

Slow Speed Turning and Balance: Depending on your experience level, you may have noticed at some point in time that its actually pretty difficult to turn your bike by turning the wheel. Many road bikes don't have clearance between the front wheel and your foot, if it is all of the way forward. A tight, slow speed turn requires a lot of balance and a ratcheting (partial strokes) action with the pedals. This tricky bike-handling maneuver should be practiced with your feet unclipped (preferably with sneakers on). Taking the time now to practice slow-speed balance and turns will

really come in handy once you are out on the ride and approaching stop signs and traffic lights in a group!

Cornering: When cornering at speed, the bike is leaned and the wheel does not turn. To lean the bike, use your inside hand to push the handlebar (rather than leaning your body), as this gives you more control to change your line in a corner. Use your outside leg to counterweight the bike, and keep the inside leg UP and tucked in against the top tube.

- ***PRACTICE on your own:*** Use your training rides to practice holding a line and riding straight. Find the white line and see how long you can ride directly on it without wavering back and forth. Also, practice holding the bike steady while removing one hand from the handlebar, so that you are free to signal, point, remove and replace water bottles, etc. To become more comfortable with your clipless pedals, pedal with one foot clipped in and one foot not clipped in. Doing this will build some confidence in your skills for riding through intersections and high traffic areas.

The BASICS: *Shifting*

[Connecticut can be hilly and AngelRide covers a challenging course.](#) One very important key to riding steadily in a group and to being able to pace yourself throughout your ride so that you can have enough energy to finish strong is to choose an appropriate gearing for the speed you want to go and the terrain you are riding on. The cadence you are comfortable with is also an important factor in this as well.

Here are some tips:

- Large gear levers move chain to larger rings, small levers move chain to smaller rings.
- On chain rings, larger is harder.
- On cassette, larger is easier.
- Right levers work the rear derailleur, left levers work front derailleur.
- Find the right gear for the speed you want to go and the cadence you are comfortable maintaining.

Climbing and Shifting:

- Gear down, e.g. be sure to stay ahead of the gears and anticipate changes by gearing down as the hill goes up.
- Avoid shifting with the pedals loaded, especially on the chain ring (trying to drop to a smaller ring with the pedals loaded almost always results in the chain coming off)!
- To incorporate more of your leg muscles, especially the glutes and hamstrings and hip flexors - thus, giving you a more powerful pedal stroke - you should be sitting back on your saddle. Concentrate on initiating your pedal stroke from the hip flexors - so focus on the upstroke rather than the down stroke. Your heels should dip slightly below the pedal spindle on the down stroke. Sitting back will help you climb with a bit more power and distribute your weight better.
- Always try to "spin" a smaller gear rather than "grind" a bigger gear when climbing. Doing that will save your legs from premature fatigue.
- A major cause of group crashes is riders who stand abruptly. They slow for a second, causing the rider behind to hit their rear wheel and fall. To avoid this danger, let the gap open a bit on hills or leave some space on either side.
- To avoid being the one who causes such a crash, pull your bike forward as you leave the saddle. Don't lunge and make a hard pedal stroke. Keep your speed steady. When sitting again, push the bike forward a bit.
- Pull your hips slightly forward so your upper body is in a "proud" position rather than arched over the handlebars. Shoulders are down and steady. If your hips are behind your body, then they will rise up and fall as your legs pump, this robs you of speed and power. By bringing your hips under your torso, your body will be better immobilized and more power will transfer directly down through the pedals. Still, you want to avoid thrusting your hips so far forward that you are leaning hard down on your hands. In this case, your body is too far forward.
- Keep your body still. Avoid bobbing your head, or rocking back and forth. The best climbers look like they have been skewered and fastened to their bikes. Aside from their legs pumping like pistons, their bodies are stock still.
- Staying in the saddle is the most efficient way to climb. All of the above references climbing in a sitting position. But, at times it will be necessary or advantageous to stand up. The benefits of standing up are that you produce

more power because you are leveraging your body against the bike; thus, you go faster. You usually can shift into one harder gear as well. Good examples of when to stand while climbing are when you want an extra boost over the top of a climb and into the descent.

- The downside of standing up is that your Heart Rate will rise (because you are inherently working harder). As long as you keep your HR in the appropriate range (during a workout) or under control so you don't blow up, then standing periodically when climbing is fine.

Reminder: downshift (to an easier gear) when approaching a stop or slowing for a corner, so that you can spin easily while up shifting to accelerate back to speed. Shifting up and down the cassette gives you incremental changes in speed at a consistent cadence. The jumps between chain rings are larger, obviously requiring more power output. To fine tune your shifting (to make a small change in speed or to find a more comfortable cadence), you will need to shift both the chain rings and cassette (rear sprocket cluster). The front and rear derailleurs can be shifted simultaneously.

*With the undulating terrain in Connecticut a given, you will need to make constant small gear adjustments in order to maintain a steady, constant effort and pace!

- Remember to BREATHE! ☺ You need to keep your body relaxed. Your shoulders should be relaxed and down rather than shrugged up against your neck. Your hands should be resting lightly on the tops of your handlebars.
- Hands should either be open or closed loosely around the handlebars with your weight resting on the palms. Arms should be slightly bent at the elbows, which will bring your upper body leaning forward to a degree.
- Focus on relaxing your body and relax your grip on the handlebars. The less energy you spend being uptight about the hill, the more you'll have to climb it. Breathe rhythmically and focus on EXHALING forcefully to expel CO₂ from your body!

The BASICS: *Safety and the Rules Of The Road*

As cyclists, we share the road with the same rights and responsibilities as motorists. It is absolutely imperative that when you are riding, that you are ALERT and ride DEFENSIVELY. Never assume motorists see you or will give you the right of way.

Here are a few tips to ensure your training rides are safe and enjoyable:

- **Be considerate:** do not assume the right-of-way when it is clearly not yours to take. If a motorist is at a stop sign as you are approaching an intersection, slow and give a clear signal that you are going to yield. There is often some confusion and animosity with motorists because of cyclists who blow through intersections or through stop signs when they don't have the right-of-way. Don't create a negative image for other cyclists by not following these basic rules of the road and being respectful of those who are driving.
- **Stop Signs and Red Lights:** We are required to stop at stop signs and red lights, period. That being said, it isn't always practical to come to a complete stop if you are in a group. Listen for those ahead of you to call it "clear" and proceed. Be alert and defensive at all times!
- **Same – direction traffic:** We have the right to claim the lane if necessary. If there is an obstacle in the road ahead that does not allow a motorist to pass safely, it is appropriate to stay in the lane and even signal to the motorist to stay back. It is courteous to wave a motorist around if you can see that it is safe for him to pass. It is also good PR to offer a friendly wave to motorists who show caution and are courteous.
- **NEVER ride in the lane of oncoming traffic:** This should be obvious, but believe it or not I see it fairly often out on the road.

The BASICS: *Riding Etiquette:*

Being courteous and considerate to fellow riders is important for camaraderie and safety! Here are some basic tips for riding etiquette to help ensure you and your fellow riders enjoy a safe ride:

- **Pedal smoothly, constantly, and consistently:** it takes only small adjustments in your cadence to maintain a consistent gap between you and the rider in front of you. In a "pace line," you will need to find the appropriate gear ratio that allows you a comfortable cadence while providing the power to maintain the speed of the group. Bottom line: maintain a consistent distance when possible, to the wheel in front of you. Don't let the space grow and shrink.

- **Use hand signals:** you should be comfortable using hand signals to indicate obstacles, turns, speed changes and rotation off the pack. Use verbal signals to indicate dangerous obstacles and motor traffic. Riders who are at the back of a pack commonly indicate to riders ahead that a car is approaching by yelling: "car back!" The bottom line: don't be afraid to communicate verbally and with hand signals, to other riders around you. Be aware.

- **When in a tight pack or while "pace lining," do NOT stop pedaling:** Many beginners "pedal pause" because they are not accustomed to pedaling continuously. When you stop pedaling it sends a signal to the rider behind you that the group is slowing, though it may not be, and then that rider may cause a gap by reacting.

- **Pay attention:** If you let a gap form, then sprint to close, then brake or stop pedaling to avoid running into the rider in front of you, you set up an accordion in the pace line behind you. Not good!

- **Watch out** for people in parked cars that could unexpectedly open their car door (and send you and other riders flying!). You need to be aware of them because odds are they are not aware of you!

- **Be careful crossing railroad tracks** -- always cross at a right angle to the tracks or your tires may slip into the ruts.

- **AngelRide will continue, rain or shine so Bbe extra cautious when riding in the rain.** The roads get very slick and fallen leaves and other hazards

become even more hazardous. Visibility also decreases and cars may not be able to see you as well. So slow down, especially when going down hills or bridges.

- **Be a steady wheel:** When in a tight group, if the rider in front of you is all over the place, side to side and front to back, then give a little space and make sure that you ride straight and steady. The riders behind you will thank you!
- **Passing:** Always pass a rider on the left and shout, "on your left" or "passing!" to warn that rider that you are coming up. Never pass a rider to the right hand side by using the gutter. Never pass in a double pace line by riding between the two riders in front of you. Never rotate off the front to the insider line. If you need to stop and you are in the front, try to go to the outside and then stop after the group has passed. Sudden stopping in the inside lane causes broken bones!

The BASICS: *Some Form and Skill Tips*

Your Head: It should be relaxed and in a neutral position. Be flexible, both from the standpoint of body flexibility (stretching) and a willingness to change to find a "better," more comfortable and powerful position. Suffice to say that if your neck, butt, and upper or lower back are in pain when you ride, you won't have much fun.

Hands and forearms: Relaxed, don't tightly grip the bars. Sometimes I'll put my thumbs on the outside of my bars so I don't grip them, or I'll tap my fingers lightly on the bars. Being in control, yet completely relaxed, is by far the best position to be in on the bike. Inappropriate tension = wasted energy.

Upper body: Unless you are climbing, you should be completely relaxed from the waist up. Any upper body motion is wasted energy, and most commonly results in poor "tracking." Tracking is your ability to ride in a straight line. Ride behind a smooth cyclist and you will notice that the bike travel in a smooth, straight line, with no side-to-side movement. Ride behind a poor cyclist and you will see the bike move from side-to-side. Each movement away from a straight, forward line is wasted energy and speed. Most tracking errors are caused by excessive upper body movement.

****Try this drill:** while you are riding, put both wheels on the white line on the right side of the road. Now try to ride on this line without looking at it. Looking at it will cause you to make constant small corrections. Simply ride in a straight line. As a variation, do this drill in the early morning while riding west away from the sun. You should be able to see your shadow and witness any upper body movement.

Knees: Now look down. Try to keep your knees in close to your top tube, but not brushing the top tube. If there is excessive movement left and right while you pedal, you need some additional changes in "fit." Your knees can create wind resistance, so keep them in rather than out. Also, if your knees are stuck out away from your body, the transfer of power to the pedals is less efficient.

- I try to think about bringing my knees up to my chest, or almost touching them to my elbows, and crossing them over my top tube.
- *If this is hard to do, your fit is likely the culprit. There may be some other issue going on as well, such as muscle imbalance or weakness. Be persistent in looking for the answers.

Pedaling: I've mentioned before that you should try to "pedal in a circle." This is true and will improve efficiency, but in fact, the most powerful portion of your pedaling stroke is from about 1:00 to 5:00 on the down stroke. The difficult part of pedaling is how to smooth out the direction transitions at 6:00 and 12:00. At the six o'clock position, try to think of it as "scraping mud off your shoe." At twelve o'clock, imagine yourself trying to roll the top of a barrel forward with your foot. I think that until you can smooth out these transitions, trying to apply any power on the upstroke with the small muscles of your hip flexors is probably a waste of time. Be persistent in working on improving your technique and skill as a cyclist. If you do, you'll see the benefits when you begin to kick your training up a notch later in the year.

- As a general rule, try to maintain a cadence of 90-105 rpms on all aerobic daily rides. Include drills regularly in your daily riding. Think smooth at all times!
- And, don't forget to wear your helmet EVERY SINGLE time you mount the bike outdoors. Ride safely!!

Your HELMET: This is the most important piece of bike equipment you will own. It only works, however, when you wear it (and you must) and wear it properly. **Look for a helmet that is ANSI, Snell, or ASTM** approved and make sure that it fits securely on your head. It should fit snugly all around. Always tighten the straps so it doesn't move around. And make sure that it is on top of your head (not cocked back) so that it covers the front and back. Your helmet is for your protection, not for making a fashion statement. ☺ [All AngelRiders are required to wear a helmet.](#)

The BASICS: 9 TIPS TO TAKE THE "DIS" OUT OF DISCOMFORT WHEN YOU'RE CYCLING:

In this article by Ed Pavelka of RoadBikeRider.com (with contributions from yours-truly) you will find some tips on how to make cycling, which can be downright uncomfortable at times, more comfortable!

If you are a relatively new rider, you may not know how to prevent the most common mistakes that can lead to physical discomfort during a ride. Even if you have been riding for a long time you can slip into bad habits, and end up hurting more than is necessary.

1. **Warm up/Cool down:** Allowing your body to gradually come up to "operating temperature" at the beginning of a ride, and then pedaling a few extra minutes at a very easy intensity at the end of your ride, can both go a long way toward minimizing muscle soreness and increasing both recovery from riding, and adaptation to training. Make sure to allow adequate warm up and cool down time in every ride.
2. **Eye Wear:** When you squint due to the sun or wind or even bugs, you use a lot of energy and the facial muscles can become fatigued. This can lead to headaches and strain. To reduce the risks of this occurring, try wearing sunglasses during every ride.
3. **Pain in the neck:** Try to avoid riding in the same position all of the time. This especially includes your head position. Try tilting your head from side to side, or stretching it out by sitting or standing "tall." Always remember though, safety FIRST, so don't take your eyes off the road.

4. **Saddle Sores:** Investing in a good quality pair (or two) of bike shorts, and then cleaning them after EVERY ride can go a long way toward helping you avoid saddle sores. Some folks believe that allowing your shorts to dry in the ultraviolet rays of the sun to kill any bacteria also helps. Wash yourself completely (with SOAP!) after every ride, and keep your non-riding clothes loosely fit so air can get in there! ☺
5. **Lubrication:** Speaking of that “private area,” we can’t discuss saddle sores without also mentioning lubrication. Though there are a lot of favorite lubes among many different riders, after trying many different things, I’ve come to rely upon A&D ointment as the best and least expensive lube. “Chamois Butt’r” also works well. Vaseline, in my experience, is just a little too “greasy” and the residue tends to stick around awhile. Experiment and find what works for you, but whatever you do, avoid going without some kind of lube, or you’ll be paying for it toward the end of those longer rides.
6. **Stem Length:** Your equipment obviously has a lot to do with your physical comfort. Clearly, the most important thing you can do is to have a good fit session with an expert. Remember that bikes don’t come in “one size fits all.” For example, if your stem is too long, you’ll feel stretched out and your arms will ache, and if it’s too short you’ll likely feel crunched up and it’ll affect your shoulder comfort. Read the Bike Fit 101 article for some tips, and don’t be afraid to ask questions.
7. **Numb Hands:** To keep your hands from going numb always wear gloves during a ride and try a handlebar cushion or some thick bar wrap, if you need some extra comfort. Change your grip often, so that you never completely fatigue any set of muscles. This goes along with taking regular “standing” breaks, to stretch out your low back and hamstrings.
8. **Back Aches:** Speaking of your back, soreness in the low back area is often a problem, and has many potential causes. If you are experiencing some pain, get the advice of a fit expert to be sure you are set up properly, and then remember to include some ‘core’ training as part of your regular routine. Stretching, particularly of the hamstrings, low back, shoulders, and lower leg, can have a dramatic effect as well.
9. **Foot Relief:** Foot pain can often manifest itself at the most inopportune times. To increase circulation to your feet you should vary your pedaling techniques (working the “box”) so that you are not putting undo stress on

one area. Obviously, make sure you have enough room in your toe box, taking into consideration that your feet will likely swell when the weather gets warmer.

TRAINING for the:



TRAIN (tran), v. -- *to get oneself into condition for an athletic feat or contest through exercise, diet, practice, etc.*

Now that we have moved past the parts of your bike, safety tips, and riding in a group, let's talk training! **The first thing** to know is that, yes, you have to train! Don't wait until a month before the Ride to start riding and getting ready. The longer you wait to prepare, the more uncomfortable you will be during the ride itself. Give yourself the time you need to get in shape and to improve your skills so the ride is enjoyable and safe for you and everyone around you.

Your Challenge:

Angel Ride is: **80 miles and 50 miles on consecutive days!**

Saturday, May 24 - **Angel Ride** Connecticut begins at The Yale Summer School of Music in Norfolk early on the morning of Saturday May 24th. **An 80-mile route** will take riders through the scenic towns of Norfolk, Colebrook, Hartland, Granby, East Granby, Windsor Locks, Suffield, Enfield, Somers, Stafford, and Willington. Late on Saturday afternoon, the route will end at The Hole In The Wall Gang Camp in Ashford.

Sunday, May 25 - The ride will start at the Camp and pass through the Eastern Connecticut towns of Chaplin, Hampton, Scotland, Sprague, Franklin, Norwich, Montville, and Ledyard for a **50-mile journey** to Mystic.

Let's Get Started: [There are many Beginner and Novice cyclists signed on for AngelRide 2008.](#) As a coach to many cyclists of every level, I can tell you confidently that there are a lot of ways to prepare for a "double" of this magnitude, and for each of you, the path will be slightly different. Probably the best general recommendation I can give you is that you should think of your training as preparing for a CENTURY.

*If you train so that you can confidently cover 100 miles, fueling well and hydrating well, and be willing to get on your bike the next day, then you will be ready for the **Angel-Ride** double.*

In this section on training, I will offer some general recommendations for training, cover topics such as nutrition and hydration, and provide additional training information, mileage charts, and articles that were given to me by Lynn.

Of course, at any time, feel free to email me with specific training questions, I am happy to help if I can! coachal@coach-al.com

Training BASICS:

For novice riders and experienced alike, the very first thing you NEED as you embark upon your training for this ride is a belief that YOU CAN DO IT! Believe in yourself and your ability to be successful. Of course, you will have to do the work too! The ability to ride 130 miles in two days doesn't come without a small price in terms of preparation and dedication to training.

A PLAN: The second thing you need is a plan, and then the commitment to stick with the plan! Below I will provide a variety of options for you, so you have a plan in place and are ready to follow through.

ENDURANCE: The basic cycling ability you will need most is ENDURANCE. To develop your endurance, you need to ride at a moderate intensity, as frequently as you can. The appropriate intensity to develop endurance is about 65-75% of your maximum effort. Think of this as "steady state" riding where you can carry on a conversation if you need to, but depending on whether the road goes up or down, it might be difficult for you.

INTENSITY: A Basic Primer

Since I mentioned endurance and the fact that it is best developed at an intensity of about 65-75% of max, now is a good time to give you a very broad and basic overview of intensity levels as it relates to training on the bike.

The bottom line is that endurance and “aerobic” training is best done by practicing good form and technique on the bike and riding within yourself. Your daily riding at an endurance effort level should not be “hard.” Keep your aerobic effort level comfortable. Here is a basic chart explaining 5 basic training zones in layman’s terms. The purpose in providing this is to encourage you to spend a majority of your time in the easy z1 and aerobic endurance z2 zones, only occasionally going up to z3, 4, and 5. This will allow you to build your endurance steadily and ride frequently without becoming over trained or severely fatigued.

Zone	Training Term in Program	Basic Description
1	Easy (Z1)	Recovery days, between intervals, easy aerobic training. Essentially “active” recovery but always ensure you keep good form!
2	Aerobic Endurance (Z2)	Semi long and “long” endurance training, base building. Marks the line between very easy spinning and “training,” requiring a bit of focus to maintain the pace.
3	Steady – Mod Hard (Z3)	In general, Z3 is either too hard or too easy and large amounts of Z3 time should be avoided in favor of Z2 or short, controlled periods in Z4-5.
4	Tempo (Z4)	At or Near Lactate Threshold pace. This is an effort thought of as “hard.” No more than about 10% of weekly mileage should be at this

		intensity.
5	Hard (Z5)	For use only in tightly controlled training sessions and/or short intense interval training.

FORCE and STRENGTH: In order to overcome the hills that are an inherent part of riding in Connecticut, you would be better prepared if you could increase your force ability on the bike as well. Force and strength are best developed by riding at a steady state effort over hilly terrain, but doing “hill repeats” or intervals over short but steep hills in the z4 or 5 described above, and by doing off-the-bike strength training. At the end of this training guide, I will provide a basic 12 –week STRENGTH TRAINING PROGRAM for your use, should you decide to embark upon strength work.

- **Consistency is absolutely the major key to improvement and success.**
A little more frequently, is usually better than a lot less often, if that makes sense! *Patience is the watchword.....fitness and skill is built slowly and methodically.....Build slowly.....*
- **Long term improvement of flexibility by smart stretching is very important for improvement**
- **CADENCE:** Spinning 95 to even 100+ rpms and higher (small ring) during your training and “endurance rides” is an important key for developing neuromuscular conditioning and building good pedaling technique.
- Avoid straining to turn bigger gears. Spin BIG circles, FOCUS on applying pressure all the way around the pedal stroke...
- Do you have a heart rate monitor? Though heart rate isn’t a “be all – end all” for gauging/establishing effort, it will help you to begin to understand how your body responds to stress and help you to establish some broad training zones if that is your desire.

INTENSITY: How Do We Measure It?

As cyclists, we have a variety of ways to determine whether or not we are working at the right intensity during training. Being purposeful and accurate in terms of the appropriate intensity is one of your primary goals with each and every session you do!

Here are the 5 basic ways to measure intensity to determine whether we are working too hard or not hard enough:

- Pace/speed: miles per hour
- Rating of perceived exertion (Borg scale: for this plan we will use 1 - 10)
- Heart rate monitoring
- Power or wattage
- Blood lactate measurement

Depending on what level you are at and what you have available to you, one or all of the above measures can be used to effectively gauge intensity. As you gain experience, RPE (rating of perceived exertion) is likely the most used and valuable feedback, but it only "works" if the person using it has the experience and objectivity to rely upon that feedback. Measuring wattage on the bike is, far and away, the most valuable tool that a cyclist can have to objectively measure how hard he/she is working.

HEART RATE MONITORING:

Athletic heart rate monitors have existed for several years now, but it wasn't until relatively recently that the technology behind them, and the development of heart monitor training techniques came together to make training with a monitor both simple and effective for the average person. While many endurance athletes own heart rate monitors, often they may not be using the devices to their full potential or using them correctly. Other athletes don't own a heart monitor and are unaware of the benefits of training with one.

Depending on the nature of your plan and the goals and objectives of the plan, you may or may not be asked to have and use a heart rate monitor. If you do need one and don't have one, I have a few of my favorite models available for sale on the Pursuit Fitness website.

Here are a few basic concepts to keep in mind when considering training with a heart rate monitor:

- Heart rate during exercise is a *dependent*, not an independent, variable:

- It will rise to the rate needed to provide the necessary cardiac output/blood pressure to meet the demands of the exercising muscles, but no higher. It is therefore not a determinant, but is itself determined, by power output (effort) and corresponding metabolic rate.
 - Heart Rate Monitors can be a great tool to help assess training (*intensity and adaptation*), but they are not a “be all- end all” for determining how *hard* you should go, or how effective your training is.
 - Heart rate monitors are more reliable for less intense exercise/training, vs. higher intensity (anaerobic) training. Why?
 - Heart rate lags behind true effort and has variable accuracy depending on a multitude of factors.
 - Training with a heart rate monitor should be specific: what’s the purpose of the training session?
 - Rule: Don’t be a slave to your monitor!
 - Lastly, for more information on the best ways to use your heart rate monitor, refer to Joe Friel’s new book, “Total Heart Rate Training.” This is an excellent resource!
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Century Ride Training Schedule

(author unknown – provided by Lynn)

Completing a century is to a cyclist what completing a marathon is to a runner – a milestone accomplishment that many long to attain. Although riding 100 miles in one day may sound unthinkable to a beginning rider, almost anyone can complete a century given proper training and dedication.

The schedule seen below is designed for a novice cyclist – those that currently ride less than 3 times per week or less than 50 miles/week. Find the chart on the next page:

12 Week Training Schedule

	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Total Mileage
<i>Pace*</i>	<i>Easy Hills</i>				<i>Mod Mod</i>		<i>Easy</i>	
Week								
1	Off	8	12	Off	10	Off	20	50
2	Off	10	14	Off	12	Off	25	61
3	Off	10	12	Off	12	10	30	74
4	Off	11	14	Off	13	12	35	85
5	Off	12	16	Off	14	14	40	96
6	Off	13	18	Off	15	16	45	107
7	Off	14	20	Off	16	18	50	118
8	Off	15	22	Off	17	20	55	129
9	Off	16	24	Off	18	22	60	140
10	Off	18	22	Off	24	24	65	153
11	Off	20	20	Off	24	22	65	151
12	Off	20	18	Off	20	Off	Century	158

*Pace:

Easy = leisurely, fun pace, can easy talk while riding

Mod = moderate pace, 65-70% of max heart rate

Hills = hilly route should be incorporated into ride

Training Tips:

- Find a partner(s): Having a friend or two to train with makes it harder to skip days and provides for easier, faster feeling rides. If you can't find a training partner visit your local bike shop or join your local bike club – both have regular training rides in which you can participate.
- Cadence: A pedal stroke of 75-100 revolutions per minute will help keep you working comfortably and efficiently.
- Nutrition: Experiment with your nutrition regimen on the longer rides. A general rule of thumb is to consume 1 gel every 45 minutes - 1 hour and drink 1 bottle (20-24 oz) of water and/or sport drink per hour. Consider an energy bar or banana at the halfway point of the ride as well. Experiment to make sure and find out what combination works best for you.

- Century Day: Remember to enjoy the day and ride at your own pace. Participating in a century is not a [race](#)ride to the finish—think of it instead as a journey.
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Additional TIPS:

- You will need to be able to ride 75 miles at your century pace comfortably before you attempt 100 miles. Try to do one long ride every weekend. That one long ride should be 40-50% of your weekly total, depending on your style of riding and how much you are riding. Cyclists in their twenties, thirties, and those in good shape might be able to do a long ride during the week, too, provided that they are able to recover quickly.
- You should try to increase your weekly mileage by 10% per week. At this rate, you will double your mileage every seven weeks. However, you will probably want to have an easy week every six weeks or so to avoid overtraining. To determine when you are over trained, simply take your pulse in the morning before you get out of bed. If your resting heart rate is twenty or more beats per minute higher than it usually is, you need to take it easy. You'll end up being stronger and faster if you just ride easily for a while then you would be if you continued to ride hard.
- As far as your bike goes, make sure it fits you properly. Get it checked out by a knowledgeable friend or trusted bike shop. Make sure the frame and crank aren't out of alignment. Don't change anything for at least several weeks before the ride or you might be sorry, especially if you change the fit. If you're brave enough to ride a mountain bike on a century, at least get some high pressure tires with slick treads. However, you want a happy, fun century, get a bicycle made for speed and distance. Get a road bike (with a triple crank if you don't want to torture yourself), a tandem with 700c wheels (if you can talk a companion into it), or a recumbent bike (if you want to have a unique sense of style).
- Be sure you've ridden in your clothes before. You don't want to find out after the ride that there was a problem with your bike shorts or that your helmet doesn't really fit. After doing long rides to prepare for your century, you should have an idea about what you'll be comfortable in. Take a jacket and

tights to the ride. It's often quite cool at 6 o'clock in the morning and you never know when it's going to rain. Be prepared!

- Don't wait until you're hungry. Stop at every stop on a supported ride. Stretch your muscles and talk to the other riders. Make your century enjoyable for yourself. On a non-supported ride, stop every hour or two and stretch, eat, and talk. You'll be a much happier rider!
 - Don't "hammer" the bike. Take it easy! Don't get out of the saddle if you can manage, especially for the first 75 miles. If you are worn out after 20 miles of hill climbing, you won't be too happy at mile 90. Just have some fun on your bike and be sociable and you'll be done before you even realize you just rode 100 miles!
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Century Schedule from Bicycling Magazine:

In this section, you will find a training schedule ~~provided by Lynn~~, which I believe comes from Bicycling Magazine. I hope you find some of the information helpful.

Week	Mon-Easy	Tue-Pace	Wed-Brisk	Thu	Fri-Pace	Sat-Pace	Sun-Pace	Total Miles
1.	6	10	12	Off	10	30	9	77
2.	10	13	15	Off	13	44	17	112
3.	10	15	17	Off	16	53	20	123
4.	11	16	19	Off	16	53	20	135
5.	12	18	20	Off	18	59	22	149
6.	13	19	23	Off	19	64	24	162
7.	14	20	25	Off	20	71	27	177
8.	16	20	27	Off	20	75	29	187

9.	17	20	30	Off	20	75	32	194
10.	19	20	30	Off	10	5	Century	184

Here is another BASIC Century “tips” GUIDE [provided by Lynn](#):

For the next three months, ride 10 to 15 miles during the week.

- You can do it before work, after work—or even TO work!
- Alternate fast miles with slow miles. Find some hills to ride.
- Go for a mountain bike ride, which can be much steeper and harder than road riding—great aerobic training!
- On the weekends, do your longer ride.
- Here’s a breakdown of how your mileage might flow out during the 12 weeks:

- Weeks 1 & 2: 25 miles
Weeks 3 & 4: 35 miles
Week 4: 45 miles
Week 5: 50 miles
Week 6: 50 to 55 miles
Week 7: 55 to 60 miles
Week 8: 65 miles
Week 9: 70 miles
Week 10: 75 miles
Week 11: 80 to 85 miles
Week 12: The Century, 100 miles!

Here is a **sample TRAINING SCHEDULE** taken from Elizabeth Quinn’s article, “Training For a Bicycle Century,” in the “Your Guide to Sports Medicine” Newsletter:

- Saturday: 1-2 hour ride with 30 minutes of hard effort
- Sunday: 1-2 hour ride at steady pace (65% MHR)
- Monday: Rest
- Tuesday: 1-1.5 hour ride with hills
- Wednesday: Rest or 1-hour easy recovery ride
- Thursday: 1-1.5 hours with interval training
- Friday: Rest or 30-minute easy recovery ride

Finally, in this next section, I will provide my own 4-week progressive TRAINING PLAN for a century for the novice to intermediate level cyclist. Each week of training

is broken down by day and provided one week at a time. Following each week's training, I will provide one TIP that I hope, helps you to progress.

This 4 week plan is best utilized after you have established a base level of fitness and should occur during the middle phase of your training. Feel free to pick and choose the elements of the plan that best suit you.

Train "smart" (read the end of the guide for some information on what training smart is), listen to your body, rest more if you need it, progress gradually, and most of all, have fun! Best of luck!

<h2 style="margin: 0;">Week 1: 4-Weeks to a Century Training Plan</h2> <p style="margin: 5px 0;"><i>Pedaling Skills & Endurance Focus</i></p> <p style="margin: 0;"><small>© Pursuit Fitness, LLC, all rights reserved, 2008</small></p>
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DAY	CYCLING	CROSS TRAINING – RECOVERY	
Day 1	Off	Off	
Day 2	Optional – 30': Do a gradual W/up to z2, focusing on spinning your legs at a cadence of 90-105 rpms in the SCR over moderate terrain.	Strength Training Workout, Stretching, Yoga, Easy Running, or REST!	
Day 3	Perform a W/up to z2 of 10-20' long where you build in intensity to z2, then on flat terrain, do: Main set#1: 4x 1' <i>Spin ups in the SCR in z2</i> (1'), then spin easily for 5' and repeat the set...	Off	

**Today's
FOCUS &
Purpose:**

Improve Pedaling Skills	Remainder of the ride: z2 recommended, choice duration		
Day 4	30' to 1 hr of z1 easy/aerobic spinning	Strength Training Workout, Stretching, Yoga, Easy Running, or REST!	
Day 5 Today's FOCUS & Purpose: Improve Pedaling Skills	Perform a W/up to z2 of 10-20' long where you build in intensity to z2, then on flat terrain, do: Warm up set: 5x 10" <i>Standing Jumps</i> in the SCR (50"), then... Main set#1: 6-8x 1' <i>Spin ups in the SCR</i> (1'), then spin easily for 5' and repeat the set... Remainder of the ride: z2 recommended, choice duration	Off	
Day 6	Off	Off	
Day 7	The KEY Century Prep Ride: Extended Endurance (w/group or solo). NOTE: Goal for today is to ride up to 3 hours if you can (approximately 35-50 miles). Do your best!	Off	

Coach AI's "On-The-Bike" TIP for WEEK ONE:

Our Focus: Our focus this week is on developing our basic ENDURANCE along with developing and enhancing our pedaling skills for a more efficient and effective pedal stroke.

Tip: This is important: Since we are preparing to cover a century with this plan, one of our most important and KEY rides will be our long endurance ride on Day 7. Be rested and ready for this ride! Remember the purpose of this ride is simply to develop your ENDURANCE, i.e. your ability to remain on the bike for an increasingly longer duration of time. Stick it out – finish strong and feel good! How?

To finish strong and feel good, you must learn proper pacing...which essentially means that you must begin your rides easily and at a *conservative* pace or intensity, i.e. easier than you "think" you could maintain. As the ride progresses, if you are feeling good, you always have the option of very gradually increasing the intensity

up to and well within your z2 during the ride. Early on, you will feel you are going too slowly, but as time goes on and you begin to become fatigued, you will be glad you started out conservatively! Choose to ride smart and stay mentally strong! Stay relaxed! Breathe!

Week 2: 4-Weeks to a Century Training Plan

Pedaling Skills & Strength Focus

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DAY	CYCLING	CROSS TRAINING- RECOVERY
Day 1	Off	Off
Day 2	30' to 45' of z1 easy/aerobic spinning or take the day off and REST!	Strength Training Workout, Stretching, Yoga, Easy Running, or REST!
Day 3 Today's FOCUS & Purpose: Force and Strength	Perform a W/up to z2 of at least 20', then: Main set#1: HILL Repeats – 4x 2' with 3-5' of easy spinning for recovery between each... (*Choose a MODERATELY steep hill of about 8-10% grade and go for only 2'. Use a gear that you can turn over 70-85 rpms. Remain seated for each repetition! These are difficult efforts but you should finish feeling you could have done more! Stay in control.) Remainder of the ride: z1 recommended, choice duration	Off

Day 4	30' to 45' of z1 easy/aerobic spinning	Stretching, Yoga, or REST!	
Day 5 <i>Today's FOCUS & Purpose: Improve Pedaling Skills</i>	Perform a W/up to z2 of 10-20' long where you build in intensity to z2, then on flat terrain, do: Warm up set: 5x 10" <i>Standing Jumps</i> in the SCR (50"), then... Main set#1: 4x 1' <i>Spin ups in the SCR</i> (1'), then spin easily for 5' and repeat the set... Main set#2: 5' of z3/ <i>Tempo</i> . Note: Do this tempo segment in the SCR, focusing on maintaining a High Cadence of at least 100 rpms. Remainder of the ride: z2 recommended, choice duration	Off	
Day 6	Off	Strength Training Workout, Stretching, Yoga, Easy Running, or REST!	
Day 7	The KEY Century Prep Ride: Extended Endurance (w/group or solo). NOTE: Goal for today is to ride up to 4 hours if you can (approximately 55-70 miles). Do your best!	Off	

Coach AI's "On-The-Bike" TIPS for WEEK TWO:

Our Focus: This week we continue to develop our basic ENDURANCE and pedaling skills for a more efficient and effective pedal stroke. We are also working a little on strength and force development via some short Hill Repeats on a moderately steep slope! The "tempo" effort on Day 5 gives you a chance to go a bit harder than z2, but be sure not to go TOO hard! Stay in control. Z3 is only slightly harder than z2. You should finish feeling refreshed, not spent!

Tip #1: One of the most important skills that a developing cyclist should learn and practice is that of SPINNING at a relatively high cadence. There are many benefits of learning to "spin" at a higher cadence such as being able to react more quickly to changes in terrain or in speed when riding in a pack. However, far and away the most important benefit is that having a higher cadence and a smoother pedal stroke allows a cyclist to ride longer and at a higher speed WITH LESS muscular fatigue! Practice staying relaxed and spinning your legs!

Tip #2: Be sure your bike is set up with the appropriate gearing so that you can spin relatively easily over the steepest climbs you have in your area. Very often a triple-chain ring, or compact cranks is a viable option to be sure you have enough easy gearing. For most cyclists, a 39 tooth SCR and at least a 27 tooth large cog “on the back” is appropriate. Don’t let your ego dictate your gearing! Ride smart!

<h2 style="margin: 0;">Week 3: 4-Weeks to a Century Training Plan</h2> <p style="margin: 5px 0;"><i>Endurance Focus</i></p> <p style="margin: 0;"><small>© Pursuit Fitness, LLC, all rights reserved, 2008</small></p>
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DAY	CYCLING	CROSS TRAINING – RECOVERY	
Day 1	Off	Off	
Day 2	<i>Optional:</i> You have the option of doing a short 20-30' z1 spin to stretch out and feel good, OR...if you are tired from this weekend's long ride, take one more day of rest OFF the bike and do some relaxing RECOVERY yoga instead!	Off or light stretching, yoga!	
Day 3	<i>Optional:</i> You have the option of doing a short spin on the bike or some calisthenics or cross training.	Strength Training Workout, Stretching, Yoga, Easy Running, or REST!	
Day 4 <i>Today's FOCUS &</i>	Try to ride up to 1.5 hrs today building into z2. Focus on spinning your legs and maintaining an average cadence of 95-100 or more rpms. Ride over terrain that is similar to your upcoming “goal” event,	Off	

Purpose: Endurance	if possible.		
Day 5	Take a day off the bike today, OR.....ride for 30' of z1 easy/aerobic spinning, your choice.	Strength Training Workout, Stretching, Yoga, Easy Running, or REST!	
Day 6 Today's FOCUS & Purpose: Endurance	Try to ride up to 1.5 hrs again today building into z2. Focus on spinning your legs and maintaining an average cadence of 95-100 or more rpms. Ride over terrain that is similar to your upcoming "goal" event, if possible.	Off	
Day 7	The KEY Century Prep Ride: Extended Endurance (w/group or solo). NOTE: Goal for today is to ride up to 5 hours if you can (approximately 65-80 miles). Do your best!	Off	

Coach Al's "On-The-Bike" TIP for WEEK THREE:

Our Focus: This week we continue to develop our basic ENDURANCE and pedaling skills for a more efficient and effective pedal stroke. We are also working a little on strength and force development via some short Hill Repeats on a moderately steep slope! Since Hill Repeats are our focus, let's talk about how to climb!

Tip: Have you wondered about what the secrets are to learning how to climb! Remember that climbing is first and foremost about power to weight ratio. That means that at any given power output, the lighter you and your bike are, the better you'll be able to climb. Also, climbing well is about finesse. It is about making a hard task look very easy. Climbing is easier for some than others, but it is not easy for anyone! Here are some specific tips to help you climb better:

- First and foremost, you need to keep your body relaxed. Your shoulders should be relaxed and down rather than shrugged up against your neck. Your hands should be resting lightly on the tops of your handlebars. Hands should either be open or closed loosely around the handlebars with your weight

resting on the palms. Arms should be slightly bent at the elbows, which will bring your upper body leaning forward to a degree.

- To incorporate more of your leg muscles, especially the glutes and hamstrings and hip flexors - thus, giving you a more powerful pedal stroke - you should be sitting back on your saddle. Concentrate on initiating your pedal stroke from the hip flexors - so focus on the upstroke rather than the down stroke. The down stroke takes care of itself. Feet should flat or your heels should dip slightly below the pedal spindle on the down stroke.
- Keep your body still. Avoid bobbing your head, avoid rocking back and forth. The best climbers look like they have been skewered and fastened to their bikes. Aside from their legs pumping like pistons, their bodies are stock still.
- Staying in the saddle is the most efficient way to climb. All of the above references climbing in a sitting position. But, at times it will be necessary or advantageous to stand up. The benefits of standing up are that you produce more power because you are leveraging your body against the bike. Thus, you go faster. And, you usually can shift into one harder gear as well. Good examples of when to stand while climbing are when you want an extra boost over the top of a climb and into the descent, or when you are trying to break away from a group during a climb. The downside of standing up is that your HR will rise (because you are inherently working harder). As long as you keep your HR in the appropriate range (during a workout) or under control so you don't blow up (during a [raceride](#)), then standing periodically when climbing is fine.
- As with sitting, your body needs to stay still when you climb in a standing position. The bike should rock beneath you, but your body should stay relatively still. Put your hands on the brake hoods, so the rubber cover sits in the soft, meaty part between your thumb and index finger. Elbows should be slightly bent. Rock your bike to the right by pulling the brake hood with your right hand, causing it to roll from your index finger over to your thumb. Push with your left hand so that brake hood rolls from your thumb to rest against your index finger. Then rock your bike to the left by repeating the above in an opposite manner.
- Pull your hips slightly forward so your upper body is in a "proud" position rather than arched over the handlebars. Shoulders are down and steady. If your hips are behind your body, then they will rise up and fall as your legs

pump. This robs you of speed and power. By bringing your hips under your torso, your body will be better immobilized and more power will transfer directly down through the pedals. Still, you want to avoid thrusting your hips so far forward that you are leaning hard down on your hands. In this case, your body is too far forward.

- As in climbing while sitting, your head, neck and upper body should be still and calm. If you are gripping the brake hoods, then you are not relaxed. If your shoulders roll side-to-side as you rock your bike side to side, then you're not relaxed. Remember, finesse and ease of movement are key.
- Thanks To Ed Pavelka and Road Bike Rider, as well as an assortment of other coaches and riders for contributing to the above "Tips"!

Week 4: 4-Weeks to a Century Training Plan
Endurance & Muscular Endurance Focus

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DAY	CYCLING	CROSS TRAINING – RECOVERY	
Day 1	Off	Off	
Day 2	<i>Optional:</i> You have the option of doing a short 20-30' z1 spin to stretch out and feel good, OR...if you are tired from this weekend's long ride, take one more day of rest OFF the bike and do some relaxing RECOVERY yoga instead!	Do some YOGA today!	
Day 3	30' to 45' of z1 easy/aerobic spinning, at a cadence of 100+ rpms over slightly rolling to flat terrain.	30' to 45' of z1 easy/aerobic spinning	
Day 2 Today's FOCUS & Purpose:	Perform warm up to z2, choice duration, then: Warm up set: 3x 10" <i>Standing Jumps</i> (50"), (1'), then do 3x 1' <i>Spin-Ups</i> (1'),	Off	

Muscular Endurance	then... Main set: 4' – 3' – 2' of z4 (time trial) intervals (4'), Remainder of the ride: z1 recommended, choice duration		
Day 5	Take a day off the bike today, OR.....ride for 30' of z1 easy/aerobic spinning, your choice.	Off	
Day 6 Today's FOCUS & Purpose: Endurance	Try to ride up to 1.5 – 2 hrs today building into z2. Focus on spinning your legs and maintaining an average cadence of 95-100 or more rpms. Ride over terrain that is similar to your upcoming "goal" event, if possible.	Cyclo-CORE: Stretching, Flexibility, and Cool down Program	
Day 7	The KEY Century Prep Ride: Extended Endurance (w/group or solo). NOTE: Goal for today is to ride up to 6 hours if you can (approximately 75-90 miles). Do your best!	In the evening after the ride: Cyclo-ZEN: 30' Recovery YOGA routine, your choice	

Coach Al's "On-The-Bike" TIP for WEEK FOUR:

Our Focus: This week we continue to develop our basic ENDURANCE by gradually increasing the overall volume of riding that we will do. We also focus a little of our energy on developing our muscular endurance, which is our ability to sustain a higher effort and power for gradually increasing periods of time.

Tip: Proper fueling and hydration is critical to your success as a cyclist, and is particularly important for a century! Depending on the relative heat and humidity, you should be consuming at least 25 oz of fluids each hour while on the bike. Be sure to START your rides well hydrated by drinking AT LEAST 12-25 oz of plain water before you head out on the ride.

For most cyclists I recommend you take in somewhere between 150-250 calories per hour while on the bike, in liquid form. Try to avoid solid foods as much as possible. Experiment during your longer sessions to find what works for you, so that you will have a viable "fueling strategy" for your important event. As always, on the day of

your event, listen to your body for the warning signs it may be sending you, and then be willing to adjust your strategy if necessary.



Strength Training for Endurance Athletes

Phase 1: 8 week periodization leading into Phase 2

Coach Al Lyman, CSCS

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The purpose of this program is to increase overall stability and strength and prepare you for Phase 2. Above all, it is imperative that you:

- 1. Do not neglect the stretching portion of the program after you are done with the strength portion of the session.**
- 2. Be sure to WARM UP properly with easy jump rope, spinning, or running.**
- 3. Relax and take your time! Since you will do this strength training session twice per week, you have the time to do it correctly and thoughtfully!**

If you are even a tiny bit unfamiliar or uncomfortable with any of the skill lifts/movements in this program, please seek some guidance from a trained

professional and/or ask some questions! Always err on the side of caution, e.g. do not get hurt! Perfect form - perfect execution of the exercises is THE most important facet of strength training, because your goal is to get stronger without getting hurt in the process! You will find pictures and descriptions for each movement contained in the program, beginning on page 4.

IMPORTANT: Read carefully and ask questions if you have them.

Lastly, remember two VERY important things:

- 1. NEVER lock your knees or lock out any other joint while lifting weights. Doing this often leads to injury and reduces the effectiveness of the exercise.**
- 2. ECCENTRIC contractions (the part of the repetition when the muscle is lengthening while under a load) are extremely important for strength and power development. Take your time when lowering the weight back to a resting position. Think!**

WEEKS 1-8 = INITIAL ADAPTATION/PREPARATION 1, 2, and 3 (2 sessions per week)

Always warm up with some light calisthenics, rope jumping, or 5-10 minutes easy spinning on the bike or running, etc.

THE EXERCISES

Note: this program contains exercises which rely upon CORE strength and stability to execute. However, if you have time available after completing the workout, you have the option of including 5-10 min of additional CORE exercises. Ask if you have questions.

- 1. Back Squat w/ Barbell** (Prep 1&2): *Prep 3: alternate days doing 1-Leg Squats in place of the Back Squat on 1 day per week.* (Remember that the first set should always be LIGHT, for a proper warm up!)
- 2. Push Ups with legs on Stability ball.** (Prep 1-2: shin on ball; progress to moving feet and toes up on to the ball as you gain strength, all with perfect form! - Prep 3: Once in position, alternate Jackknives with a push up).
- 3. Squat, Curl To Overhead Press** (1st set should always be light)
- 4. Hamstring Curl on the Stability ball,** (Supine: as you gain strength, move heels more toward center of the ball)
- 5. Calf Raise** (pronate "up" to second toe – read directions carefully)
- 6. Row – Bent Over with Dumbbell** OR prone on Stability ball w/ dumbbells, your choice. (Always start with a very light weight!)
- 7. Lateral Lunge** (add resistance by holding a med ball or 5-20lb dumbbell)
- 8. Leg Raise** – Prone Over Ball
- 9. Lat Pull** – Rolling on Stability Ball OR on a Lat Pull down machine
- 10. Dips** with 2-Feet on the Stability Ball OR on dip bars OR a dip machine

11. Finish up this ST session with a **“Wall Sit” (or isometric squat)**. Begin with 30” and add 30” to it each week until you reach 5 minutes straight, then...

5-15 minutes stretching all of the major muscle groups. Focus on any area that you consider to be especially tight or a limiter...

Additional Notes/recommendations on Squats: You have the option to use either the squat machine, free weight squats, or Leg Press machine for hip flexion (exercise #1 above). While the Back Squat is preferable, you may use whichever you feel most comfortable with and which is available to you. Also, if you need to you may use the *Hack Squat* or *Sled* machines in place of free weight squats.

Note: *General weight target for squats: 1.3-1.8x body weight. Ask if you are unsure!*

REPETITIONS & SETS

PREP 1 ==> Weeks 1-2 ==> 2x15-20 reps with 30 secs. rest between sets

PREP 2 ==> Weeks 3-5 ==> 2x10-15 reps with 30 secs. rest between sets

PREP 3 ==> Weeks 6-8 ==> 2x6-10 reps for everything, 45-60 secs. rest between sets

***Rep Note:** Start each 2 or 3 wk block at the top end of the rep range with an easily do-able weight, and then gradually increase weight and reduce reps as the block progresses. End each block at the bottom end of the rep range. Avoid going to absolute failure, especially early in this phase.

As I mentioned earlier, **ECCENTRIC contractions** (the actual “lowering of the weight”, e.g. the part of the repetition when the muscle is lengthening while under a load) are extremely important for strength and power development. **Take your time when lowering the weight back to a resting position. Think!**

EFFORT

PREP 1 & 2 – not to failure, slow and comfortable speed (4 secs. per cycle)

PREP 3 – Push harder, with last two reps just about to complete failure, rep speed slow to moderate (Hit these sessions in Prep 3 pretty HARD. Make one a very focused “get stronger” type session; the second session is hard but not necessarily pushing your limits. It’s during this phase that you want to make all your strength gains. Think strong, think power – the last sets are where the action is. Push your limits.)

NOTE: if at any time you are unsure, always take the time to find and use a spotter when you are working with free weights, particularly back squats.

CORE note: Draw IN your belly button toward your spine on all exercises and maintain a tight core, effectively training your core stability and strength throughout this entire strength training program!

The OVERALL Goal of this PREPARATION PHASE

It's not until Prep 2 and then in Prep 3 that you start really working and adding real strength per se -- so hold back and focus on preparing to crank it up a bit in this last prep period. Use the first four/five weeks to get back in the groove. In PREP 1 & 2, if you feel the need for some variety you are free to insert some "different" exercises if you want. However, always be a stickler about the quality of the MOVEMENT at all times. Perfect form will reduce the likelihood of injury!

Regardless of how you may feel during this phase, make it your goal to stick with it!! You will be primed to be faster when you come off this phase and recover. Your goal in this phase is to PUSH WEIGHT, PERIOD!! Make your body do it!

Think SAFETY AT ALL TIMES!!

Program NOTES/Exercise DESCRIPTIONS

Weight

With all movements, start with a lighter weight than you think you need. The purpose of PREP 1 is simply to master perfect form, with very little resistance. There is no rush. Build into the program gradually. Allow your body to adapt slowly.

Warm-up

A proper warm-up is essential, particularly once you are into the heavier lifting parts of the program.

Stretching

Post-lifting is the ideal time for an extended full-body stretch. Utilize a rope or towel so that you can take advantage of the contract/relax form of stretching, known as 'proprioceptive neuromuscular facilitation.' NOTE: You are in a warm, dry environment with mats. Take advantage of it. Now is the time to improve your permanent flexibility! Contact me if you have questions. I have "Fraid Not" stretching ropes which make PNF stretching easy to accomplish! If you need one, let me know.

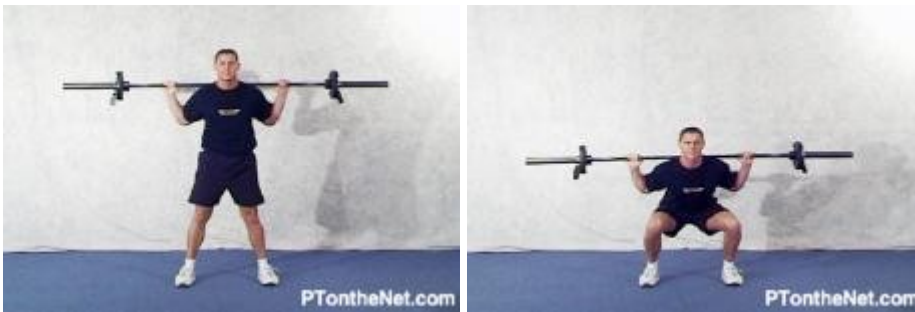
1. Back Squat w/ Barbell

Preparation:

- Feet may be placed around shoulder width or SLIGHTLY wider, with minimal external rotation. (NOTE: The wider the stance [abduction], the more external rotation of the feet is required to maintain alignment at the knees). Ideal stance would match the crank arm / pedal position on the bike.
- Place bar comfortably on the upper back.
- DON'T BE AFRAID TO USE A BAR PAD!

Movement:

- From the start position, draw your belly button inward toward your spine.
- Maintaining tone in the deep abdominal musculature, descend slowly by bending at the knees and hips.
- During the descent, maintain weight distribution between the mid-foot and heels. *Do not allow the feet to cave inward or shift outward.*
- While maintaining tone in the lower abdomen and optimal kinetic chain alignment, “drive” through the feet extending the ankle, knee, and hip joints while your weight is evenly distributed between heels and mid-foot. *Do not allow body weight to shift toward the toes.*
- The knees should track over the second and third toe.
- **Perform downward reps slowly and concentrate on the eccentric** (descent) and the isometric (squat position) alignment of your body.
- **Descend as far as you can control.** I tend to think of these (for our purposes) as partial squats, not full squats. We rarely get enough flexion at our hips in our sports to warrant going very deep, especially since it brings with it added risk of injury.



1a. Leg Press - Hack Squat

Preparation:

- Adjust back pad for comfort. Note: The higher the back pad position, the greater the hamstring length due to the increased hip angle.
- Seated in machine, attain neutral alignment of the spine.
- Keep hips in pad. Once stabilized, hips should not rotate upward.

Movement:

- From the start position, draw your belly button inward toward your spine.
- With knees slightly flexed and aligned properly, slowly lower the legs. Stop if alignment is lost or when buttocks begin to “pop” off pad.
- To return to the start position, straighten the knees (without locking out) toward the machine.
- How far the knees extend (returning to start position) will depend on individual control capabilities. Full extension is permissible when controlled. Due to the direction of resistance, beware of hyperextension of the knee.
- Check knee alignment, stabilize spine and repeat under control.

- Always be in complete control of the resistance. You should be able to stop the resistance at any time during the exercise. If stopping is not possible, decrease the amount of resistance you have employed.
- Keep hips in pad.
- Continually monitor alignment before and after every repetition.



1b. One Leg Squat (prep 3 only)

Preparation :

- Perform drawing in and pelvis floor contractions.
- Lift one leg off the floor and dorsiflex elevated ankle. Keep feet parallel in frontal plane.
- Maintain level hips.

Movement :

- Grip toes in your shoes or on the floor (IF NO SHOES)
- Initiate the squat by bending the knee, keep the shoulder blades down and together.
- As your knees bend, flex forward slightly in the spine but keep chest up.
- Squat down as deep as you can with good control, maintaining heel contact with floor and watching hip and knee alignment (no pronation).
- Return back to starting position and repeat.



2. Push Ups

In a prone position, place hands at a width that will allow the forearms to be perpendicular to the

floor when the elbows are flexed at 90 degrees. Come into plank position with elbows extended, make sure the entire body is in a neutral position.

Flexing at elbows, lower the body, maintaining neutral spine. Push back to starting position. Use desired REP TEMPO.

Note: Once you master normal pushups, move your legs up on to the Stability ball. As you continue to gain strength, move the feet closer to the center of the ball, increasing the stress on the core and shoulders. Progress slowly, but do progress!



2a. Jack Knife with Push Up on Stability Ball

Preparation :

- Lie prone on the ground, hands are slightly wider than shoulder width and spine angles are 'neutral'.
- Place shins on the stability ball.
- Activate core with a drawing in and pelvic floor contraction.

Movement :

- With your arms extended, perform a stability ball roll – in crunch by bring your knees to your chest.
- Bring your legs back into triple extension (at hip, knee, and ankle) and do a push up.
- Once your arms are in full extension, repeat movements.
- AVOID letting your back sag by keeping the core engaged and activating the glutes and lats.



3. Squat, Curl To Overhead Press (dumbbell)

Benefits: This exercise is a great total body workout that stabilizes, strength, and dynamically stretches the entire kinetic chain. A good functional exercise that increases dynamic flexibility, neuromuscular control, coordination, and caloric burn.

Preparation:

Perform drawing in and pelvis floor contractions.

- Begin with shoulder blades retracted and depressed, good stability through the abdominal complex, and neutral spine angles.
- Hold the dumbbell by your side with the palm facing your thighs.

Movement:

- Take a deep diaphragmatic breath.
- Initiate the squat with triple flexion in the legs (at hips, knees and ankles), remember to keep the shoulder blades down and together.
- Squat down ONLY as deep as you can control with good form (Trainers: if client can squat down past 90 degrees with no compensations and have no orthopedic restrictions, then encourage it!).
- As you squat back up to a standing position, breathe out.
- Once standing, maintain dumbbells to the shoulders
- Slowly reverse the arm of your body.
- This completes one



proper alignment, bicep curl the and perform a shoulder press. action and return arms to the side repetition.



4. Hamstring Curls - Supine with Stability Ball

Preparation :

- Start by lying on back with arms outstretched and palms up.
- Place heels on ball with toes pointing straight up.

Movement :

- Perform an abdominal draw-in and squeeze glutes to raise your hips from the floor.
- Next, curl your heels toward your glutes by bending your knees.
- Slowly return to the start position while maintaining the level of your hips throughout the entire exercise.
- Do not allow the feet to externally rotate while flexing the knees (keep toes pointing straight up).
- Do not allow your hips to drop while flexing the knees. If your hips continue to drop, descend the progression by performing hip extension only.
- Progressions: 1 leg kick, 1 leg diagonal kick Inertia progression: power ball – to cable – to tubing.



5. Calf Raise

- Stand in proper alignment with hands on hips and feet straight ahead. Ensure ideal scapular position by an adequate retraction and depression and chin tuck. Grip toes on the ground.
- While maintaining total body alignment, raise heels off floor and hold. Lower slowly and repeat. Make sure that there is good stability in the frontal plane (side to side).
- In Prep 2, if you have made strength gains, you may progress to doing a calf raise off a step, for more range of motion (dorsiflexion). Use caution to NOT over extend at first (drop the heel below the step), as this movement places enormous eccentric stress on the Achilles and calf. Progress slowly, move SLOWLY, and be sure to press/squeeze at the top of the movement / ROM.



6. Rowing – Bent Over with Dumbbells

Preparation:

- Stand with feet shoulder width apart over the bar, flex at the hip and slightly at the knees.
- Take a grip width that allows the forearms to be perpendicular to the bar when the elbows are flexed at 90 degrees.
- Maintain neutral spine and head position.

Movement:

- Assume a 60-45 degree bent-over position (commonly known as a functional stance).
- Maintaining optimal posture, pull the dumbbells toward your chest (focus on retraction of scapulae). Focus on generating movement from your core instead of just pulling with your arms.
- Return to the start position and repeat movement.
- Lower dumbbells at desired REP TEMPO.



6a. Row: Prone on Stability Ball with Dumbbells

Preparation:

- Maintain proper alignment through the kinetic chain by positioning the feet straight, glutes tight, 'neutral' spine angles, shoulder blades retracted and depressed, and chin tucked for good cervical alignment.
- Activate the core with a proper drawing in and pelvic floor contraction.
- Lie prone with your lower abs / hips on the stability ball, feet against a wall and proper alignment.

Movement:

- Choose light dumbbells and perfect the technique before moving to a heavier load.
- Start with the dumbbells under the chest, in line with the ground.
- Row the weight up with both arms, keeping the elbows wide.
- The shoulder blades should retract gradually as you row the weight, then protract as you lower the weight slowly.
- Keep the core and glutes tight to avoid lower back discomfort.



7. Lateral Lunge

Preparation:

- Start with small step and a shallow knee flex
- Don't try to control the movement, consciously allow the body to react to the ground reaction, gravity & momentum

Movement:

- Step in the frontal plane, allowing the body to react to the ground force, gravity and momentum
- Return to the starting position and alternate
- As the movement looks more fluent, gradually increase the ROM of the step



8. Leg Raise – Prone Over Ball

Preparation:

- Push up position with arms slightly bent and ball under hips.
- Activate transverse abdominus (pull belly button towards spine and maintain there for entire exercise breathing shallowly).
- Legs straight and together.

Movement:

- Lift both legs toward the ceiling as far as active ROM allows (you should not hyper-extend your lower back), lower both legs to starting position and then repeat. At the top of the movement, SQUEEZE your butt/hams and hold tightly for 1-2 sec, before lowering.
- Control is essential, don't rush through any part of the movement.
- If you feel any discomfort in back discontinue the exercise.



9. Lat Pull – Rolling on Stability Ball

Preparation:

- Assume a kneeling position on the floor with your hands and forearms resting on the ball about shoulder width apart.
- Before initiating the movement, set yourself in an optimal postural position.

Movement:

- From the start position, draw your belly button inward toward your spine.
- Maintaining optimal posture, flex the shoulders while extending the hips. The shoulders and hips must move together while spine is stabilized.
- Return to the start position when the abdominals can no longer stabilize the starting postural alignment.
- This exercise requires a lot of stabilization! If a person cannot perform the “draw-in” maneuver, this variation must be simplified!
- Use a slow tempo (examples: 3-3-3, 4-0-2, 2-2-2).



9a. Straight Arm Lat Pull down

Preparation:

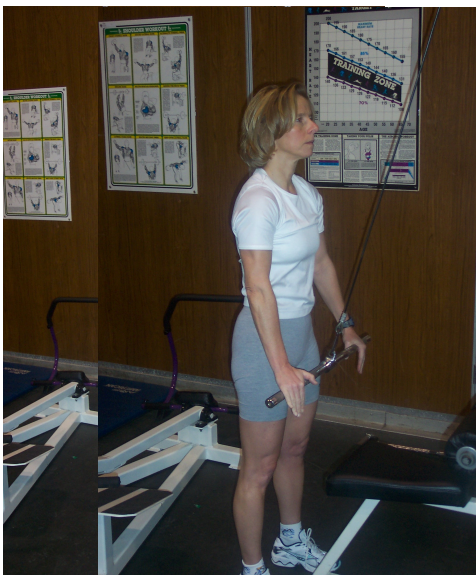
- Hold "upper" cable handle in palms down position with arms fully extended. Exhale and "draw in" to create a very tight core/torso.

Movement:

- Bring your arms straight down slowly to moderately fast, all of the way to your thigh. Rise very slowly to start position while exhaling.

Important Notes!

1. **Keep core TIGHT and back flat and straight.**
2. **Don't start with a TOO HEAVY weight.**



10. Dips with 2-Feet on the Stability Ball

Preparation:

- Position body as pictured with the arms shoulder width apart.

Movement:

- Bend elbows and lower body towards the floor.
- The depth of the dip will be determined by the active ROM assessment of the shoulder girdle in extension - and NO LOWER!!! DO NOT go lower than you can comfortably. Do NOT injure your shoulders!
- Push back up and repeat.



12. "Wall Sit" or Isometric Squat (Optional w/ Stability ball)

Preparation:

- Stand in proper alignment, feet at shoulder width, toes pointed straight ahead, with hands behind the head, fingers interlocked (DO NOT PRESS INTO THE HEAD/NECK).

Movement:

- Draw your belly button inward toward your spine.
- Allow yourself to lower to a squat position under control without compensation.
- Extend your hips, knees and ankles to a standing position.
- Start with a 30 sec "hold" in week 1, and progress if you can, by adding 30 sec to your hold each week. This will challenge you!



FINAL NOTES AND REMINDERS

1) Keep your body optimally balanced at all times!!

- **Head, trunk, and pelvis in a "balanced" vertical alignment. If one part of your body is allowed to go "out" of alignment, other parts will have to move out of balance to compensate. This leads to less than optimal adaptation and a much higher risk for injury.**
- **Maintain the 3 natural curves of your spine, i.e. inward to the neck, outward at the upper back, and inward again at the lower back.**

2) Maintaining your POWER CORE is important! What is it?

- **Knowing and recognizing a power posture 'position' is paramount to your safety in the gym, and to ensure the success of your program. Build your posture from the ground up. Think of your core, with a strong transversus, oblique, back and abdominal muscles as the center of your POWER.**
- **Follow the 3 steps below to build your optimal "power core" from the ground up.**

Step 1) Pull your belly UP and IN. Stand with your feet firmly planted and pelvis balanced over them.

Step 2) Pull up on your "pelvic floor", i.e. lift your anus. This muscular floor at the base of your spine is your column of power. Do this right before exertion, which increases intra abdominal pressure, which in turn helps to strengthen the muscles there, i.e. *sphincter ani*, *levator ani*, and the *coccygeus*. NOTE: women are often more familiar with the "pelvic floor" because of the Kegal exercises taught to expectant mothers. To increase awareness and improve your ability to hold this position, practice!! ☺ Try it when you're sitting in traffic and are bored. Try to

make the distance between the navel and the anus as short as possible. While practicing, use a rhythm of "hold for 5 seconds, relax for 5 seconds."

Step 3) Make sure your head is "right," i.e. not too far forward. Though body movements originate in the pelvis, your head movement directs them. If your head is out of place (usually too far forward), nothing else will work right. To keep your head in its proper alignment, press your tongue against your upper palate, just behind and above your teeth. This is sometimes called a 'tongue lock.' It is part of the power posture that links the head, neck, and spine into the power center of the abdomen and pelvis. Whenever you perform a "power" type lift, i.e. squats, lunges... use a tongue lock to increase the effectiveness of the lift!

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INDOOR TRAINER SKILL AND FITNESS DRILLS:

At least one time during the week as you prepare for the **Angel-Ride** Weekend, if you have an indoor trainer you should get on it and practice some skill drills to improve your pedaling efficiency. Among your goals for this skill work are: 1. to refine your pedal stroke and promote pedaling efficiency/coordination/strength, and 2. to develop easily referenced drills that you can employ in training and racing situations.

Though it is common to think of these skill drills as “winter only” or off-season training, I believe there can be great benefit to performing these drills through out the entire training year.

Some additional goals for these drills are:

1. To improve your ability to sustain a higher overall cadence during rides at A-RaceRide “goal speed/pace.”
2. Learn to be able to *feel* and reference all aspects of the pedal stroke (to more effectively vary muscle recruitment and spread the workload out)
3. Learn new skill drills that help you to keep your indoor training fresh and interesting
4. Improve neuromuscular coordination and strength which eventually will turn into greater power production and efficiency at your “goal speed”
5. Learn to “float” a leg, e.g. shutting one leg off while pedaling so that it can have a rest. This is a valuable skill that can be employed in racing situations.

The following conventional (well known) and non-conventional (not so well known) drills will help you to achieve all of the above.

Please note: ALWAYS include a thorough warm up period prior to beginning these challenging drills. A proper warm up ensures that you will reduce the likelihood of injury while also increasing the potential benefits.

CONVENTIONAL SKILL & STRENGTH DRILLS:

1. ONE LEG ONLY Drills (OLDs): These drills are the hallmark of serious cyclists off season training program. They are the most efficient and cost effective way to develop your pedaling efficiency and technique. Remember when you pedal with both legs, the leg that pulls the foot through the bottom of the stroke, up the back and over the top, gets lazy. That’s because the other leg is pushing the pedal down, a much more powerful and natural action than pulling the pedal up! Now, think about it: if your leg doesn’t help bring the pedal up and over the top, it’s just dead weight. It increases the resistance your muscles must overcome to move your bike down the road. Learning to complete a 360-degree circle with each leg makes you a

better more efficient rider, which automatically makes you a better more efficient runner too! The key “feeling” you want is to have constant pressure on the pedal at all times during the entire cycle. Here’s a tip: think of your pedal stroke as a box: push earlier over the top, push down and then pull straight back at the bottom.

Most importantly, vary gearing and also build volume slowly. It’s best to start with an easy gear (for neuromuscular development) and then progress to a very BIG gear for force development. In the plans, we start with short repetitions of 30 sec and build up to 1-2 minutes. Cadence should also vary. As a general rule, keep cadence below that point when your stroke begins to “break up.” Avoid constantly hitting dead spots – slow to a lower cadence and then increase over time as you improve.

2. “SPIN UPS” – Leg Speed: These “speed” drills are excellent for developing your pedal stroke. There are two ways to approach these. Here’s both ways:

1. In a low gear, spin at 70 rpms for 10 seconds. Each 10” interval increase cadence by 5 rpms. You’ll know when the cadence gets too fast to sustain for 1 minute or more because your butt will begin to bounce on the saddle. Focus on “planting” your butt on the saddle and don’t bounce! Stay smooth and relaxed at all times. Maintain “pressure” on the pedal at all times, but keep the pressure “light”.
2. Again, in a very easy/low gear, begin spinning at 80 rpms and quickly increase your cadence to a speed that is as fast as you can possibly pedal (over 130 rpms!). Do this for 20-30 seconds, and then “soft pedal” to recover for 30 seconds to 1 minute before repeating.

3. “SUPER SPINS”: You know the drill here. The purpose of these is to build leg speed and efficiency! In an easy gearing (these are neuromuscular drills so high tension is not wanted or needed) spin your legs *AS FAST AS POSSIBLE* and don’t bounce! Like spin-ups, keep the pedal pressure light and focus on staying relaxed. Reps are usually 15-30 seconds long.

4. “SUSTAINED” HIGH CADENCE SPINNING: Sustaining a “high” cadence for a certain period of time, and then increasing those lengths of time as training progresses, is GREAT neuromuscular training and also great aerobic training. For our

purposes here with these training plans, we will define HIGH CADENCE spinning as any set where the rider is asked to sustain 100 rpms OR MORE, i.e. 105+ rpms or 110+ rpms. Remember to use a very easy gearing, as the focus with these sets is neuromuscular coordination, not force production. In these plans, we begin with short reps of 3-6 X 1 minute (w/ short rest intervals), and then gradually build up over a period of time up to 1 hour duration. The goal is to learn to relax and become comfortable sustaining a higher overall cadence. Relax and spin your legs!

5. "JUMPS" – Stand and Sprint: These explosive efforts are purposeful drills designed to increase your ability to quickly accelerate. Here's how to do this strength drill:

#1: In a large gear (perhaps BCR, 53x15), stand and sprint hard for about 10 seconds. Sit down, shift to an easy/low gear and recover for about 50 seconds. This means each rep would be approximately 1 minute. Harder efforts will require more recovery.

6. POWER ACCELERATIONS: *These are also designed to help you develop force and power like JUMPS. The primary differences are that you are seated for Power Accels and the focus is on BIG gear strength. Here's how:*

When you are ready to begin, soft pedal while shifting to a BIG gear such as 53/12-14 (If you are a beginner/intermediate level cyclist, choose a slightly easier gear until you get the necessary strength). Your cadence will be very slow, i.e. 30-50 rpms. At the beginning of each repetition you want to EXPLODE by pulling up hard and pushing down as hard as you can with maximum pressure, accelerating for up to 20-30 seconds. Shift to an easy gear and recover with "soft pedaling" for 30 sec to 1 min, depending on the length of the repetition. Repeat at the end of the rest interval. Stay seated at all times!

THE BASICS: Training Nutrition Summary

In this segment of the manual, I will share both my own experience and advice for how to handle nutrition on the bike, and before and after riding, and I will also share a helpful article prepared by Steve Born or Hammer Nutrition. I hope that together,

this information is helpful for you in determining how to best fuel your training prior to [Angel Ride](#), and during [Angel Ride](#).

Regardless of the length of a training session or event, proper nutrition and hydration are extremely important to the success of that particular event. Obviously, the longer the training/racing event, the more critical proper hydration and fueling becomes. As example, an event like an Ironman is essentially an eating contest on the bike and run. The "raceride" doesn't start until about mile 16 of the run, so the smart guys pay very close attention to getting this stuff dialed in before the [raceride](#). Since I have been an endurance athlete for the last 25 years, I have a well-wired plan based on hundreds and hundreds of hours in the saddle and on the road.

Fueling: Your body burns mostly fat to produce the energy to pedal a bike, if you are riding at a low/medium aerobic intensity (the higher the intensity, the more 'sugar' or glycogen that you burn). However, it also needs carbohydrates to burn that fat. Carbohydrates is stored in the muscles as glycogen. A well trained endurance athlete has about 2000 calories of glycogen stored in the body, between liver and intra-muscular stores. This is enough for about 2-2.5 hours of intense exercise. Once you burn through these stores, your body has to switch to a much less efficient means of producing energy. Your perceived exertion increases dramatically and you are suddenly unable to maintain the same pace. More importantly, your brain only works on the burning of glycogen, not fat. When the glycogen is gone, you will feel dizzy and disoriented. This is called Bonking. For those of us who have been there, we don't ever want to go back. Boom, boom, out go the lights. For any training sessions or [racerides](#) lasting longer than about two hours, you will be best served to take in some carbohydrates to supplement your glycogen stores.

Hydration: A net water loss of as little as 3% of body weight can produce a substantial decrease in your performance.

Pre-Ride Application: The longer or more important the training session, the more attention you should pay to starting fully hydrated and with full glycogen stores.

Here is what I do:

1. Begin hydrating when you first wake up by drinking at least 1 full glass of water.
2. Drink as much water as you can stomach before going to bed.
3. For training sessions early in the morning, do not eat solid food beforehand as that will only disturb your hormonal status, create digestion "issues," and affect your RPE. You should have enough glycogen stored in your body to get in a session of 1 hr in length. For sessions over 1 hr in length, begin fueling right after you begin the session.
4. My stomach is at least two bottle cages and I use them both every chance I get, always carry plenty of water or make sure you have plans in place to get water if you need it!

During the Ride/Session: I like to think of this in terms of two ranges along a low risk – high risk continuum.

1. **Liquid calories to solid calories**

As you move from liquid to solid calories, the risk of digestion problems increases (gas, bloating, stomach shut down, etc). It's easier to process 800 calories of liquid than it is solid.

2. **Low to high heart rate**

As you move from low to high heart rate, the risk associated with eating increases.

MY BEST GUIDANCE AND ADVICE: The best cycling fuels I know of are made by Hammer Nutrition. I recommend you go to their website (<http://hammernutrition.com>) and read the plethora of articles and tips that they provide for proper fueling.

If you are interested in ordering some products, go to the Pursuit Fitness website (<http://pursuit-fitness.com>) **and CLICK on the HAMMER NUTRITION logo. That will take you to the HAMMER NUTRITION website. Order some Perpetuem, Hammer Gel, or HEED, as these are the preferred source of calories for training.**

Generally speaking,

1. I never use solid food during training or racing. We are all unique in our needs, but this is important in my opinion.
2. 200-400 calories per hour from liquids, regardless of source but preferably from Hammer Fuels, i.e. *Perpetuem*, *Sustained Energy*, or *Hammer Gel*.
3. If your heart rate is high, stick to the low end of the scale. If your heart rate is low, bump to the right of the scale.
4. YOU MUST experiment during your training rides to determine what works best for you. On long aerobic rides I can take in 400-500+ calories per hour.

Some tricks I use are:

- Always start the ride or roll away from a rest stop with a stomach full of water.
- 3-4 bottle cages on the bike, for long or hot rides.
- Carry your own powder. I always carry a ziplock baggie of *Perpetuem* or extra packets of *Hammer Gel* with me.

Post-Ride:

After the ride you need to take care of two issues:

1. Replace fluid loss.
2. Replenish glycogen stores to ensure successful training sessions downstream.

Fluid Loss: Weigh yourself and compare to pre-ride weight. A net weight loss is fluid. Try to replace it within about two hours of the ride, pound for pound.

Glycogen Stores: A recovery meal is probably the most important thing you can do after a ride. General guidance is 800-1000 calories of carbohydrates and protein. Liquid is preferred, as it hits your muscles more quickly than solid. My post long ride routine is:

- Immediately after finishing a long ride or run, I will have a big smoothie/recovery shake with water, soy milk, crushed/juiced fruit and whey

protein powder, glutamine, branched chain amino, etc. See my articles on the PF website for recovery tips!

- About 10-15 min. later, another 500-100 calories of quality carbohydrates, protein, and good fats.

Eat normally the rest of the day.

Beginning on the next page you will find an excellent article by Steve Born from Hammer Nutrition that will provide some sound reliable guidance for fueling. Steve is a multi-time RAAM finisher and winner of the Furnace Creek 508. Enjoy the read!

15 Simple Ways To Improve Your Athletic Performance Right Now. Fueling Guidelines That Are Easy to Follow

By: Steve Born

Proper fueling of the body prior to, during, and after exercise requires personal experimentation to find the ideal fit for you, the individual athlete. There is no "one size fits all" approach; we are all "experiments of one" when it comes to fueling during exercise. You need to determine, through trial and error in your training, what works best for you. However, there are some basic guidelines that will enable you to eliminate much of the guesswork, so you can more rapidly learn how to properly fuel your body, allowing you to enjoy higher quality workouts and better [raceride](#) performances.

Some of these recommendations may seem pretty foreign to you, especially in regards to fluid, calorie, and electrolyte replenishment during exercise, where some "experts" tell you that you need to eat and drink at or near depletion rates. Before you subscribe to and follow those suggestions, consider the words of Bill Misner, Ph.D.:

The human body has so many survival safeguards by which it regulates living one more minute, that when we try too hard to fulfill all its needs we interfere, doing more harm than good. If I replace all the fuels I lose at the rate of 700-900 calories per hour, I bloat, vomit, present diarrhea, and finish the event walking or at an aid station. If I replace all the fluids lost all at once, I end up in the emergency tent with an IV for dilutional hyponatremia. If I replace all the sodium my body loses at the rate of 2 g/hour, I end up with swollen hands, eyes, ankles, feet, and noticeably labored exercise, or hypernatremia-induced bonking.

At an easy aerobic pace, the rate of metabolism increases from a sedentary state to a range of 1200-2000%. As a result, the body goes into "survival mode" where blood volume is routed to working muscles, fluids are used for evaporative cooling mechanisms, and oxygen is routed to the brain, heart, and other internal organisms. Interestingly, it NOT focused on calorie, fluid, and electrolyte replacement, as some of the "experts" advice.

Pretty bold words (and warnings), indeed. The truth is that you don't need to suffer the undesirable maladies Dr. Misner describes; they're not a mandatory part of being an athlete. If you follow our suggestions, we believe you will not only avoid performance-ruining and potentially health-threatening consequences, you will also have much more enjoyable experiences and achieve better performances in your workouts and [racerides](#). These suggestions have their roots in science and have been proven time and time again (and again and again) over the course of several years in working with endurance athletes. You have nothing to lose, and a whole lot to gain, by testing them in your training. I'm betting that the more of the following recommendations you adopt and practice in your training and racing, the fewer problems you'll run into fueling-wise and the better your performance will be.

1. Keep fluid intake during exercise between 16-28 ounces per hour.

There's probably more misinformation on the subject of hydration than any other aspect of fueling, which is really bad because over hydration also presents the most serious physiological consequences of any fueling issue. Acute over hydration can cause hyponatremic (low sodium) induced coma and death.

In general, most athletes, under most conditions, will satisfy hydration needs with a fluid intake in the range of 20-25-ounces/hour—roughly the equivalent of the standard size of a small or large water bottle. Lighter athletes and/or athletes exercising in cool weather conditions may only require an intake of 16-18 ounces/hour. Larger athletes and/or athletes exercising under very hot and humid conditions are the ones that can consider fluid intakes at the high end of that range (28 ounces/hour), perhaps even upwards of up to 30 ounces/hour on occasion. Sure, you can sweat more than that, but you cannot physiologically replace it ounce-for-ounce.

Regular fluid intake over 30-34 ounces hourly really increases the potential for serious performance and health problems, so keep that in mind before you indiscriminately gulp down excessive amounts of fluid. If you override your internal mechanisms, you'll find out the hard way how your body deals with excess water intake during intense exercise. Unless you enjoy nausea, bloating, and DNFs, forget advice like “drink to replace” or “drink even when you're not thirsty”—it's just plain wrong.

2. Restrict caloric intake to 300 cal/hr during exercise.

If you want to watch your [raceride](#) go down the drain fast, follow the “calories out, calories in” protocol that some “experts” recommend. **Fact: your body can't process caloric intake anywhere near your expenditure rate.** Athletes who attempt to replace all the fuels they lose—which can be upwards of 700-900 calories per hour—will most likely end up with bloating, nausea, vomiting, and/or diarrhea. Sound like a good strategy to you? We didn't think so.

If you want to achieve your best performance, replenish calories in “body cooperative” amounts, allowing your fat stores to make up the difference, which they will easily do. For most athletes, 240-300 cal/hr will do the job. For lighter athletes, 180-200 cal/hr may be just the ticket, while larger athletes can consider hourly intakes of slightly over 300 cal/hr.

Far too many athletes think they need to match calories out with equal amounts of calories in. They're usually the ones on the side of the road or off the back, waiting for their stomach to stop rebelling. If you follow a more sensible caloric intake, you'll be blowing by them, not joining them.

3. Avoid simple sugars in your fuels; use complex carbohydrates only.

You've heard the phrase "garbage in, garbage out," right? Guess what—simple sugars (glucose, sucrose, fructose, and dextrose) are garbage. They're inefficient fuels for exercise, and they're health hazards when consumed regularly in typical dietary quantities. They have no place in your body.

This leads to the question, "Why do companies include these types of sugars in their products?" Most likely because simple sugars are cheap, they sweeten the product, and they allow the label to read, "Packed with XX carb per serving." But just look at the side panel to find out what you're really getting.

Simple sugars give you energy peaks and crashes, and they also have a severe limitation on absorption. They need to be mixed in weak concentrations for efficient digestion, which means you can only intake about 100 cal/hr. You can consume more, but you can't absorb more. You'll only get sick trying. Complex carbohydrates, however, absorb at about three times the rate as simple sugars. That covers the 300 cal/hr we just mentioned. Plus you get smooth, steady, reliable energy—no peaks and valleys. Yes, complex carbohydrates do contain, as part of their naturally occurring structure, a small percentage of 1- or 2-chain sugars. There's a big difference, however, regarding how your body responds to these sugars when they are "part of the whole" rather than when they're isolated and added to a product as a separate ingredient... big difference.

As far as the fairly recent "multiple carbohydrates" studies are concerned—the research that found that a blend of carbohydrates increased oxidation rates, indicating higher energy production—take a closer look at the studies before you jump on the bandwagon. What you'll notice is that most of the studies' subjects (cyclists) exercised at low intensity, only 50-55% maximum power output, which I think we'd all agree is very much a recovery pace, if that. To be blunt, at a leisurely 50% VO₂ Max pace, athletes can digest cheeseburgers and pizza with no gastric issues. So the issue isn't whether the results of these published studies are disputable, but rather if they apply to faster paced, longer duration bouts of exercise. We do not believe this to be the case, which is why we do not recommend the use of multiple carbohydrate sources during exercise.

Look, we're not going into a long physiology lesson now; we just want to save your body, your health, and your performance. If you take the "garbage in, garbage out" concept with any seriousness you'll avoid the glucose/sucrose/fructose/dextrose products and stick with complex carbohydrate fuels.

4. Exercise over two hours requires protein, too.

Carbs alone won't satisfy all of your energy requirements once you exceed two hours or so. Protein will have to satisfy roughly 10% of your energy requirements. You have two choices:

1. Use a fuel such as Sustained Energy or Perpetuem that contains both complex carbohydrates and soy protein.
2. Allow your body to literally feed upon itself (that is, digest your own muscle tissue) to make fuel.

Did you pick #1? Good call!

5. Use soy, not whey, during exercise.

Whey protein is a superb protein when it's used at the right time: after exercise. Do not use it before or during because the added glutamine quickly degrades to produce ammonia. Ammonia build-up is a primary culprit in muscle fatigue, and you're already producing ammonia when you exercise. Don't make it worse.

Now, there is some confusion regarding glutamine and ammonia that we'll clear up. Yes, glutamine does eventually scavenge ammonia. The key word, however, is "eventually." When glutamine metabolizes it increases ammonia initially, but then scavenges more than originally induced systemically, taking approximately three hours or so for it to accomplish this. Again, since you're already producing ammonia during endurance exercise and since ammonia is a primary culprit in fatigue, it seems logical that you'd not want to increase ammonia levels. However, that's exactly what you'll do when you consume glutamine supplements or glutamine-enhanced whey protein during exercise.

Soy or rice gives you the protein you need with minimal extra ammonia production. After exercise, when ammonia production is not an issue, glutamine-enhanced whey

protein is great for immune system boosting, muscle tissue rebuilding, and enhanced glycogen synthesis.

6. Use liquid fuels as your main energy source, even during prolonged training and [racerides](#).

There's nothing wrong with consuming a little solid food on occasion during prolonged exercise as a pleasant diversion from the monotony of liquid fuel consumption, but you must:

- Make wise choices. Choose foods that have little or no refined sugar and saturated fats. Don't think, "I'm a calorie burning machine so I can eat anything that I want." What you put in your body greatly determines what you get out of it. Remember: garbage in, garbage out!
- Make solid food consumption the exception, not the rule.

Solid food is harder to digest than liquid, and it requires more time, water, and electrolytes. Relying too heavily on solid foods can leave you feeling lethargic, bloated, and nauseated. Liquid fuels digest and absorb readily, so you avoid those unwanted maladies. Most of all, avoid all junk foods, which contain lots of saturated fats and refined sugars, at all times. Believe me, when the latter stages of the [raceride](#) are upon you, you'll be thanking yourself that you took a pass on that sugar & fat laden pastry earlier in the [raceride](#).

7. Remember to replenish electrolytes during exercise.

You can get your energy fuels ("gasoline") dialed in right, but if you neglect the electrolytes ("oil"), the dash light comes on-except your body doesn't have a dash light. Instead, you get cramps, spasms, muscle revolt, irregular and rapid heartbeat, and major bonk. Don't wait for the light to come on; those are the final symptoms of increasing impairment. If you don't respond well before your body's oil light comes on, you can pretty much kiss optimal performance, and probably the whole [raceride](#), goodbye.

8. Don't rely on salt tablets to fulfill electrolyte requirements.

- “Electrolyte replenishment” does not mean “sodium or salt replenishment.” Sodium chloride (a.k.a. “salt”) is indeed an important component of electrolyte replenishment but it does not fulfill the entire requirements. Calcium, magnesium, and potassium should be replenished as well as all these minerals play key roles in the maintenance of many important body functions.
- Most of us obtain more than enough salt from our daily diet and most athletes have a reservoir of upwards of 8,000 – 10,000 mg stored in body tissues. In other words, when you start your [raceride](#) you’ll most likely be doing so with a huge reserve of sodium chloride “on board.”
- Keep in mind that “too much” can have as many performance inhibiting-to-ruining consequences as “not enough.” Over the years we have observed that far too many athletes “over salt” their bodies during exercise, with a variety of maladies such as bloating, water retention (edema-like symptoms), and stomach distress being the usual and undesirable outcome.

When it comes to sodium/salt replenishment the key is to provide an appropriate dose to support the maintenance of normal body functions without overwhelming the body with too much, which will override and neutralize those mechanisms.

How much salt is enough? Electrolyte depletion is widely variable—you can't rely on a “one-size fits all” bottled drink or drink mix. You need to experiment and find your own range for any given weather condition and duration of exercise. That being said, 200-400 mg of sodium chloride (salt) per hour, as part of a full spectrum electrolyte replenishment product, is a good starting point for most athletes under most conditions. That’s the amount you’ll receive in 2-4 capsules of Endurolytes. Certainly there will be occasions when 100-200 mg of salt (1-2 Endurolytes) will be completely adequate; on hot-weather workouts or [racerides](#), it may be necessary to consume 500-600 mg/hour (5-6 Endurolytes).

9. Don't use any new supplement or fuel, or supplement/fueling protocol, in a [raceride](#) without having first tested it in training.

This is a cardinal rule for all athletes, yet you'd be amazed how many break it. Unless you're absolutely desperate and willing to accept the consequences, do not

try anything new in competition, be it equipment, fuel, or tactics. These all must be tested and refined in training.

Since all Hammer Nutrition fuels are specific and formulated to easily combine with one another, you have all the flexibility you need to ensure that you can tailor a fueling program for any length of [raceride](#), regardless of conditions. You'll never have to guess or try something off the table in hopes of trying to keep going another hour.

10. Be flexible with your fuel consumption during a [raceride](#), keeping in mind that what may have worked in training may not be appropriate under [raceride](#) conditions.

Caloric intakes that worked during training may not be appropriate during a [raceride](#); you may need to consume slightly less in a [raceride](#) than you did during training. Why? Increased anxiety, increased pace, and increased potential for dehydration all contribute to the possibility of a less-than-optimally functioning digestive system. In addition, at the increased pace during a [raceride](#), more blood is diverted from digestion and directed toward maintaining muscle performance.

When you get to the [raceride](#) it's great to have a caloric "game plan" in place, but don't be a slave to it. You may need to alter that game plan (which may mean a slightly lower hourly intake of calories) to accommodate the possibility of a less-than-optimal digestive system.

11. Replenish your body with carbohydrates and protein as soon as possible after each exercise session.

Here's a statement to remember: "When you're done training, you're not done training, at least not until you've put some fuel back into the body." Equally important as your workout (muscle exhaustion and nutrient depletion) is what you do immediately following your workout (muscle repair and nutrient replenishment). If you neglect to refill the tank, you'll never get the full value out of all the work you just put in... and what a waste that would be.

Increased fitness simply won't happen, at least not efficiently or effectively, if you ignore your body's cries for fuel replenishment. Give your body what it needs immediately after exercise, when it's most receptive to replenishment, and it will

respond wonderfully—recovering faster, efficiently adapting to physical stress, and “learning” how to store more and more readily available fuel in the muscles.

An ideal and easy-to-use post-workout fuel is Recoverite, with its 3:1 ratio of complex carbohydrates and protein. Mix a couple of scoops with water, drink, you're done... simple. You've just put the best “finishing touches” on your workout that you possibly could, and you've given your body a great head start on tomorrow's workout.

12. Don't over-consume food the night before the [raceride](#) in the hopes of “carbo loading.”

It would be nice if you could maximize muscle glycogen stores the night before the [raceride](#), but human physiology doesn't work that way. Increasing and maximizing muscle glycogen stores takes many weeks of consistent training and post-workout fuel replenishment. Excess consumed carbohydrates are only going to be eliminated or stored as body fats (dead weight), so don't go overboard during those pre-[raceride](#) pasta feeds. Eat until you're satisfied, but not more.

13. For [rides](#) ~~rides~~ over 60 minutes in length, finish a pre-[raceride](#) meal three hours prior to the start of the [raceride](#).

Let's assume you've been really good—you've been training hard (yet wisely) and remembering to replenish your body with adequate amounts of high quality calories as soon as possible after each and every one of your workouts. Great! You've now built up a nice 60-90 minute reservoir of premium muscle glycogen, the first fuel your body will use when your long [raceride](#) begins. Don't blow it now by eating something an hour or two prior to the start of the [raceride](#)!

Do you know what happens when you eat within three hours of exercise? Your muscle glycogen stores get burned much more rapidly... in long-duration events that's definitely not performance enhancing! For workouts and [racerides](#) lasting longer than 60 minutes (perhaps up to 90 minutes at the most), refraining from calorie consumption for the three-hour period prior to the start is crucial because you want to preserve your glycogen stores, not accelerate their depletion.

During shorter distance [racerides](#), however, accelerated rates of glycogen depletion/utilization are not problematic so following the "three hour rule" isn't a necessity. You don't need the calories for energy (muscle glycogen stores will take care of the majority of that), but the presence of carbohydrates will elevate glycogen utilization. That's what you want for a short [raceride](#). If you eat something 1-2 hours prior to the start of a short-duration [raceride](#), thus causing the insulin "flood gates" to open, yes, you will be depleting your glycogen stores at maximum rates. However, at this distance it's a beneficial effect, as glycogen depletion is not an issue when the [raceride](#) is over within, at most, 90 minutes.

Bottom line: Fast three hours prior to the start of a longer-duration event (60-90+ minutes). For shorter events, consuming a small amount of fuel an hour to two prior to the start may enhance performance.

14. Don't sacrifice sleep to eat a pre-[raceride](#) meal.

OK, you're convinced that it's a good idea to eat at least three hours prior to the start of your [raceride](#). "But wait," you say. "My [raceride](#) starts at 7 a.m. Are you telling me I have to get up at 3 a.m. or so just to eat?" Well, you could get up to eat if you're so inclined, but you don't have to. The fuel you've got stored in the muscles? It's going to be there, full strength, even after a night-long fast (really). In the morning your brain may be saying, "I'm hungry," but your muscles are saying, "Hey, we're good to go."

Bottom line: do not sacrifice sleep just to eat. If you've got an early morning [raceride](#) start, the best strategy is:

- Eat a high quality meal the night before (topping off liver glycogen stores)
- Get an adequate amount of sleep
- Have 100-200 calories of easily digested fuel (Hammer Gel is ideal) 5-10 minutes prior to the start of the [raceride](#)

That's right, 5-10 minutes prior, not one or two hours prior. The key, in terms of muscle glycogen depletion rates, is in the timing. If you must eat before the start of your [raceride](#), you need to complete consumption three hours prior. If that's not logistically feasible, have a little something 5-10 minutes prior. Do that and you won't expend your hard-earned glycogen too rapidly.

15. Consume appropriate amounts of high quality food for your pre-[raceride](#) meal.

The goal of the pre-[raceride](#) meal is to top off your liver glycogen, which has been depleted during your sleep. Believe it or not, to accomplish this you don't need to eat 600, 800, or 1000 calories or more, as some would have you believe. A pre-[raceride](#) meal of 200-400 calories-comprised of complex carbohydrates, perhaps a small amount of soy or rice protein, and little or no fiber or fat, and consumed three hours prior to the start of the [raceride](#)-is quite sufficient. You can't add anything to muscle glycogen stores at this time (you'll just be topping off liver glycogen stores), so stuffing yourself is counterproductive, especially if you've got an early morning [raceride](#) start.

REST AND RECOVERY

Does exercising and/or training make you faster or stronger?

If you answered "yes," you are only partly right. You see, exercising and "training" only creates the CONDITION, or the possibility, for improvement. The actual improvement occurs when you allow your body to rest and recover, so that you emerge at the other end stronger and faster.

The Overload Principle

Why, exactly, do we train? Your body is a very adaptable machine. When you introduce a stress, it adapts and becomes better able to handle the stress. To explain how it works, let's introduce two numbers that have been referenced by coaches for as long as I can remember:

1. Fitness, 1-10. This is just a measure of how "fit" you are, as determined by how much volume, intensity, etc, that you can handle. 1 is a couch potato, 10 is Lance Armstrong.
2. Fatigue, 1-5. This is a measure of how "tired" you are, which also measures the cumulative training stress on your body. 1 is fresh as a daisy, 5 is crushed.

Now, as an example, let's say that at the start of the training period, your fitness is an 8, meaning your body can perform "work" equal to 8. Your fatigue is a 1, you're ready to go. During the week, we train at a Fitness level of 8.5. We "overload" your body by introducing stress greater than what it is able to handle. As a result, cumulative training stress builds up, increasing your Fatigue from 1 to 4.

So, we have created two conditions:

1. We have introduced a training stress (8.5) that is greater than what your body is currently able to handle (8).
2. We have increased your Fatigue from 1 to 4.

Like I said above, your body is a remarkably adaptive machine, but it must be given time to rebuild and regenerate. You do this by resting, thus allowing your fatigue to decrease from 4 to 1. During this rest period, your body adapts to the training "overload" and emerges with a fitness level greater than the original 8, let's call it 8.2. Congratulations, you are now stronger and faster.

But what happens if you don't rest?

Remember that the training process is built around breaking your body down and allowing it to recover to a higher state of fitness. If you don't allow it to rest, you just keep breaking it down more and more. Your performance will begin to spiral downward. In summary:

1. Many people associate fatigue with increased fitness. Fatigue becomes the objective of training, not faster performances.
2. Fatigue is an opportunity that you create by training. You capitalize on this opportunity by resting and allowing your body to recover.
3. So the actual workout is only half of the training session. You complete the training session when you allow your body to rest and recover before the next hard training session.

TRAINING SMART:

- **ALWAYS, ALWAYS keep training SAFETY at the fore-front of your thinking each and every day you walk out the door to ride or run or train:**
 - Never ride without a helmet, use appropriate safety gear for visibility and protection from the elements, ride and run defensively, expecting unforeseen “things” to happen in a split second, and assume that every driver you see while riding or running can’t see you, and is on their cell phone too! And of course, never do an open water swim without a partner! Train safely! Take care of yourself, so that you can take care of those who love you and who you love!
- **Exercise at the correct intensity so that the right energy systems are trained.**
 - Most endurance athletes train TOO HARD during easy days, and not hard enough during HARD days. Don’t make this mistake on a routine basis, or your performance and improvement will suffer!
- **Be *purposeful* in all that you do in a training context**
 - Do you know what the purpose is for every workout? You should! If not, find out!
- **Exercise consistently**
 - It is much better to do a little nearly every day, then it is to do nothing for days and then HIT IT for a day or two. Be as consistent as you can be...a little is better than nothing at all, nearly 100% of the time.
- **Be patient and persistent so that your progress is steady and progressive**
 - This sport demands patience! If you are in a rush, choose another sport! It takes time to get good, and the more you rush, the less you enjoy, plain and simply. Relax, do your best, and be patient and persistent!
- **Be sure to get adequate rest and recovery**
 - It is when you rest that you improve. Without adequate rest, you won’t recover, which means that when you do train, you are just putting laying down more damage upon already damaged tissues. That single error will set you up for injury and frustration, more than any other single factor.

- **The last and perhaps most important element to TRAINING SMART is that you must learn to *relax* and trust your intuition. Approach your training holistically. Integrate the mind, body, and emotions. Develop pure motivation!**

Most of us find training to be relaxing and a way to get away from our daily grind. Unfortunately for many Type-A athletes (that describes most of us, don't you think?), we often start out with pure motivation and intent to enjoy the process. As time goes on however, that original intent can turn into a compulsion and drive that moves us farther away from the state of relaxation we sought at the start. Fueled by compulsion, results, ego, and peer pressure, our "drive to succeed" often comes at the expense of a balanced life, relationships, true enjoyment, and even our own mental and physical health.

Yes, my friends, I am here to tell you that in my experience, the *greatest secret weapon you have as an athlete* is **your ability to listen and trust your intuition and connect your mind and body**. Only when you can do this will you be able to make the correct daily training decisions that will ultimately determine your athletic success.

I think Brad Kearns, in his book **Breakthrough Triathlon Training**, said it best:

"The problem for today's athlete is not lack of knowledge about training principles or workout ideas. The problem comes when you treat your training schedule as an entity independent from your lifestyle."

For example, please take one minute to think back and be honest: how many times have you trained through a pain that you knew in your heart wasn't smart? How many times have you stressed yourself out simply to "get in a workout," only to find that because of the stress, the quality of the workout was so poor that it did more harm than good to your confidence? We all have been there! It is time to stop and listen!

Kearns explains: "A pain in your knee is a report from your body that homeostasis is not present, that your joint is inflamed. That's all your body knows – it doesn't care

whether you are trying to impress your training partners by going off the front during a tough workout, or whether you are on PR pace at mile 22 of the marathon; it just knows that your knee hurts." In a very real way, for many of us our greatest strength (our drive to succeed) can also be our greatest weakness.

None of this means that you don't have to dig deep sometimes and suffer in order to achieve! Ironically enough, for those who are embroiled in the "rat [raceride](#)" on a daily basis and who constantly ignore the signals that their body sends to them, when the time comes for them to truly have a breakthrough peak performance, their ability to dig deep isn't there! They have depleted the reserves they needed to perform – the well is dry.

To truly have a chance for peak performance, where you make the right decisions at the right times, you need to pay attention to something other than your mind. Respect your body, keep things in balance, and appreciate the emotional and mental wisdom your body is capable of, TRUST your intuition!

My friends, this is the secret weapon that can free you and empower you to new levels of achievement and fulfillment and peace. Let go of the compulsion and the demands of the ego and eliminate your own perceived limitations; stop judging yourself, measuring everything, connecting your self worth with a [raceride](#) result, and trying to control every facet of your environment.

Gordo Byrn said it best with this quote:

"...there is a performance paradox that runs through every area of our lives. The paradox lies in the fact that we need to balance total commitment with low personal attachment. Meaningful achievement flows most easily from individuals that define themselves in light of what they do, rather than what they accomplish. Our ultimate performance flows from freeing our body to do what we've spent thousands of hours preparing it for. There comes a point when we must get out of our own way."

The journey really IS the destination! And, in what is one of the true ironies of life, IF we focus on enjoying the process and making our daily habits positive ones, the end result usually takes care of itself! **Train with an eye on SAFETY FIRST, best of luck, and enjoy!**

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